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# SPORT COACHING FOR MENTAL WELL-BEING: A SYSTEMATIC LITERATURE REVIEW

Grassroots' organised sport and exercise coaching as a means of promoting and improving mental well-being in adults

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ICSSPE

SPIRIT

Sport & Psycho-social Initiative for Inclusive Training with an aim to develop a framework for humane, inclusive and empowering coaching and sport clubs that nurture mental wellbeing.

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# Contents

# 1. INTRODUCTION

This systematic review is one of the intellectual outputs of the SPIRIT (Sport & Psycho-social Initiative for Inclusive Training) Project, which consists, among other issues, in a new capacity building approach for coaches to develop a holistic well-being-enhancing physical activity offer for adults, with a special focus on people at risk of experiencing mental health issues. Therefore, this systematic review investigates the role of coaches in the promotion of mental well-being-enhancing physical activity. It depicts factors that positively and negatively influence coaching behaviour and impact on the mental well-being of sport participants. Furthermore, the review provides a conceptual map for analysing these factors in the specific context of recreational grassroots sport, and recommendations for the training of coaches what to consider for coaching and how to promote mental well-being.

In the following, we present the rationale, definitions and the specific objectives of the systematic review.

## 1.1. Rationale and purpose of the review

In this non-clinical field, various systematic reviews have synthesised the literature on the social and mental benefits of sport with children, adolescents and youth (Biddle et al., 2019; Crane & Temple, 2015; Dohme et al., 2019; Eime et al., 2013b; Jones et al., 2017; Lubans et al., 2012, 2016; Mansfield et al., 2018; Sheridan et al., 2014; Vella, 2019), adults (Eime et al., 2013a; Mason & Holt, 2012; Rebar et al., 2015) and older adults (García-Hermoso et al., 2020; Jenkin et al., 2017; A. C. H. Kim et al., 2020; Rosenbaum & Sherrington, 2011). They all highlight the importance to consider both, mental and social well-being. On the one side, mental health problems and social exclusion negatively impacts on sport and physical activity participation and therefore needs to be thoroughly considered in the promotion of sport participation. On the other hand, these reviews portray potential benefits of sport and exercise on well-being and social capital.

For example, the systematic reviews on sport and physical activity in the field of forced migration and refugee settlement (Middleton et al., 2020; Spaaij et al., 2019; Spaaij & Oxford, 2018) point to a similar multi-directional relationship between sport, social health and mental well-being. People forced to flee from conflict regions have often suffered from extreme and traumatic experiences (persecution, war, torture, and violence), which may have caused loss, grief, separation from the family and friends, as well as a high prevalence of mental health disorders, i.e., PTSD, depression and anxiety disorders (Hebebrand et al., 2016).

These experiences are often still present in the current situation in form of intrusive memories and flashbacks. Besides migratory and post-migratory stressors (e.g. continued insecurity and vulnerability, violence, detention or deportation, fears and uncertainty about the future), acculturation challenges are added, at least in those seeking protection in a 'new society' (Ley & Rato Barrio, 2019). The term *refugee*[1] is frequently used for all people forced to flee armed conflict, violence or persecution and seeking protection in another country. However, we can distinguish between *recognised refugees* and *asylum seekers.* People who are recognised as refugees have been granted the right of protection; meanwhile *asylum seekers* are awaiting a response to their application for protection and thus live in uncertainty and fear of deportation (Bradby et al., 2015). It is important to note that the health experiences, needs and behaviors may widely differ among and within refugee and asylum seeker cohorts (Bradby et al., 2015; Ley et al., 2018, 2020). Mental health issues such as sleep problems, intrusive memories, depression, anxiety and PTSD hinder participation in sport and physical activity (Hartley et al., 2017; Ley et al., 2020). However, mental health benefits of sport participation include distraction from problems and ill-being, positive affect, flow experiences, improved coping strategies and self-efficacy beliefs, and restorative effects, reducing depression and symptoms of anxiety (Ley et al., 2018; Spaaij et al., 2019). Furthermore, mental health is strongly related to social inclusion; for example, social support fosters mental well-being, and mental ill-being fosters social isolation (Ley & Rato Barrio, 2019; Spaaij et al., 2019). Similar multi-directional relationships were showcased by systematic reviews on sport and physical activity in culturally and linguistically diverse migrant population (Gerber et al., 2011; O'Driscoll et al., 2013; R. Smith et al., 2019). In these reviews diverse populations with different migration backgrounds are included. While they may share some similar challenges and barriers for sport participation (Ley & Rato Barrio, 2019), past experiences, push and pull mechanism, recency of settlement and recognised rights as well as resource loss, accessibility and networks may differ among migrants groups. Due to the high prevalence of past and current stressors and lack of resources, asylum-seekers are particularly in risk of experiencing ill-being and mental illness and exclusion from sport (Hartley et al., 2017; Ley et al., 2020). Therefore, Ley & Rato Barrio (2019) describe specific strategies for coaches, trainers and facilitators to avoid triggers of intrusive memories and distress, and to provide a safe place to do sport.

The existing literature provides evidence for the social and mental health benefits of sport and exercise. However, less evidence is provided about how to achieve these benefits in recreational grassroots and community sport.

[1] By using the term "refugee" we do not want to reduce anyone to their forced migration background, since the experience of forced migration is one of many life experiences. The way and intensity of forced migration experiences may affect the well-being in different ways. We acknowledge that it is required to consider individual life experiences and living conditions in the context of the past, presence and future (Bradby et al., 2015; Ley et al., 2018, 2020).

Hence, the purpose of the current review is to look at the role of coaching to achieve these benefits. While some of these reviews highlight the crucial role of the coach, trainer or facilitator, these reviews do not specifically focus on the role of the coach or of coaching for promoting mental well-being. Therefore, we review the scientific literature on coaching and mental well-being to portray the current knowledge about which coaching-related factors influence well-being and how to promote well-being of athletes and coaches. More specifically, we look at how coaching behaviour and coach-athlete relationships affect sport participants' well-being. In addition, we look at specific interventions or programmes that aim to promote mental health literacy and awareness, and the well-being among coaches and athletes/sport participants. In this review, we focus on the coaching in grassroots, community and club sport. Subsequently, we specify this context of coaching.

## 1.2. Coaching context

The model of coaching effectiveness (Cote & Gilbert, 2009) seems appropriate to differentiate the diverse setting of high performance or elite sport and grassroots, community and club sport. Côté & Gilbert (2009, p. 316) defines coach effectiveness as "the consistent application of integrated professional, interpersonal, and intrapersonal knowledge to improve athletes' competence, confidence, connection, and character in specific coaching contexts". Importantly, the specific coaching context determines the required knowledge and athletes` outcomes, as the coach is required to meet his/her athletes' needs and help to meet his/her specific goals (Cote & Gilbert, 2009, p. 315). In our review, the specific coaching context is rather the recreational grassroots and community sport (in contrast to development sport and elite sport) with a primary focus on participation coaching and less focus on performance coaching (Cote & Gilbert, 2009).

> "***Participation coaching*** *is distinctive because competition performance is not emphasized, and participants are less intensively engaged with the sport. Objectives are characterized by short-term goals, enjoyment, and health-related outcomes. Performance coaching, on the other hand, entails a more intensive commitment to a preparation program for competition and a planned attempt to influence performance variables. To this end, there is a high degree of specificity in the program that a coach delivers to his or her athletes (e.g., physical conditioning, psychological training)"*
>
> Cote & Gilbert, 2009, p. 314.

Côté & Gilbert further propose objectives for the *participation coach for adults* (2009, p. 317):

1. "Provide opportunities for athletes to interact socially
2. Afford opportunities for athletes to have fun and playfully compete
3. Promote the development of fitness and health-related physical activities
4. Teach and assess sport-specific skills in a safe environment for long-term sport involvement
5. Teach personal and social assets through sport (citizenship)"

Grassroots and community sport also includes, to a varying degree, competition and performance orientation; thus, some of the coaching objectives of a performance coach for adults may be relevant, which are (Cote & Gilbert, 2009, p. 317):

1. Set up training regime grounded in deliberate practice
2. Allow athletes appropriate mental and physical rest
3. Prepare athletes for consistent high-level competitive performance
4. Teach and assess physical, technical, perceptual, and mental skills in a safe environment
5. Provide opportunities for athletes to prepare for "life after sport"

Although the professional sports and high performance is not targeted in this review, it is worth mentioning that the International Society of Sport Psychology published a position paper on athletes' mental health (Schinke et al., 2018b). The authors outline that "mental health is a major resource for athletes in relation to their performance and development", but "athletes experience additional mental health risk factors compared to non-athletic population, such as high training loads, tough competitions, and a stressful lifestyle" (p. 622) and mental health-related problems, such as concussion, overtraining or identity crisis. The position paper concludes various postulates and challenges, including the call "to contribute to the development of autonomy supportive and culturally safe athletic environments at all sport levels; to work on increasing cultural competences of athletes and staff to destigmatise minority and migrant athletes, and facilitate sharing between cultures; to work systematically on increasing athletes' and coaches' mental health literacy, and destigmatising mental health interventions" (p. 633). Many of these aspects seem important for promoting well-being in grassroots, community and club sport as well. As we will display throughout this report, these aspects resonate in the results of our literature review.

Thus, this review focuses on *participation coaching* of adult sport participants in grassroots, community and club sports, which includes – beyond recreation – sport performance and competition elements; however, excludes high performance orientation and coaching of elite athletes. By doing so, we aim to contribute to a new capacity building approach for coaches to develop holistic well-being-enhancing physical activity/sport offers for adults.

# 1.3. Definitions

## 1.3.1. Sport, exercise and physical activity

This report aligns to the definitions of the Global Action Plan on Physical Activity 2018–2030 (WHO, 2018) and the European Sport Charter (Council of Europe, 2001). **Physical activity** is "any form of bodily movement performed by skeletal muscles that result in an increase in energy expenditure" (WHO, 2018, p. 100). **Exercise** is defined as "a subcategory of physical activity that is planned, structured, repetitive, and purposive, in the sense that the improvement or maintenance of one or more components of physical fitness is the objective. 'Exercise' and 'exercise training' are frequently used interchangeably and generally refer to physical activity performed during leisure time with the primary purpose of improving or maintaining physical fitness, physical performance, or health." (WHO, 2018, p. 98). **Sport** includes "all forms of physical activity which, through casual or organised participation, aim at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels" (Council of Europe, 2001). **Grassroots sport**: "Physical leisure activity, organized and non-organized, practised regularly at non-professional level for health, educational or social purposes" (WHO, 2018, p. 98). The latter is the main focus of the systematic review.

## 1.3.2. Mental health and mental well-being

World Health Organization (WHO) describes mental health as "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community. In this positive sense mental health is the foundation for well-being and effective functioning for an individual and for a community" (World Health Organization, 2004, p. 12). Mental health and well-being refer to more than the absence of mental disorders or illness. They take a salutogenetic approach, focusing on the resources and the factors that maintain the person healthy, instead of a pathogenetic approach, which searches for the causes of illness (Antonovsky, 1979). Both terms are conceptualised from a holistic perspective, including emotional/affective (e.g. affect balance, happiness, life satisfaction), cognitive (e.g. coping, optimism, hopefulness, sense of personal control), and psychosocial aspects (e.g. social involvement, relatedness and sociability). Thus, the concepts of mental health and well-being also include aspects of personal growth, psychosocial development and personal and social functioning, and relate to concepts like sense of coherence, resilience, hardiness, self-determination theory, self-esteem, sense of mastery, self-efficacy, self-worth, empowerment, spiritual well-being and quality of life (cf. Antonovsky, 1979; Korkeila, 2000; World Health Organization, 2004). The holistic approach of both and

other related concepts makes a clear delimitation of mental health and mental well-being difficult. For the purpose of this systematic review, we use these two terms interchangeable, aiming to include those literature that uses the term mental health as well as those using mental well-being. In addition, we used in the search strategy related concepts and terms as stated above.

Finally, it is important to note that the definitions are social-culturally influenced. Terms such as sport or mental health have varying meanings in different *cultures* and settings (depending e.g. by the socio-political climate, historical context) (World Health Organization, 2004). We acknowledge that the definitions and concepts presented here are mostly influenced by literature from socioeconomically developed countries and rather individualistic societies (e.g. Europe, Northern America, Australia).

## 1.4. Specific objectives and questions

In order to investigate the role of coaches in the promotion of mental well-being-enhancing physical activity, this review pursues the following objectives:

1. To examine which **aspects of mental well-being** are addressed in the studies on grassroots sport and physical activity coaching for adults.
2. To explore which **types** and **aspects of the delivery** of grassroots' organised sport and physical activity coaching are investigated with regards to the promotion of mental well-being to adults.
3. To analyse the **effects** on mental well-being and **effect mechanism** of the different types and aspects of the delivery of Sport and physical activity coaching for adults.
4. To provide **recommendations** for the training of coaches.

Consequently, we put the following questions, which we respond to in the discussion section:

- Which aspects of mental well-being are addressed in the studies on grassroots' organised Sport and physical activity coaching for adults?
- Which types and aspects of the delivery of grassroots' organised sport and physical activity coaching are investigated with regards to the promotion of adults' mental well-being?
- What are the effects on mental well-being and effect mechanism of the different types and aspects of the delivery of sport and physical activity coaching for adults?

# 2. METHODS

## 2.1 Eligibility criteria

Studies were selected according to the inclusion and exclusion criteria outlined in Table 1. Quantitative and qualitative studies published from January 2005 to July 2020 in Catalan, English, French, German, Italian, Portuguese and Spanish in peer reviewed journals were included. With regards to age, the general adult human population (from 18 years onwards) was considered. We included studies addressing both adults and teenagers or youth only if data relating to the adult population were reported separately, or if the mean age is not lower than 17.5 years old. As described above we focused on participation coaching and excluded articles on performance coaching whenever they deal with high performance and elite athletes/coaches.

**Table 1: Inclusion and exclusion criteria**

| | Inclusion criteria | Exclusion criteria |
|---|---|---|
| **Study design** | quantitative studies; qualitative studies | Comentaries; viewpoints; case reports; protocols; development and/or validation of questionnaires |
| **Type of publication** | Peer-reviewed journal articles | Not peer-reviewed |
| **Year of publication** | 2005-2020 | Before 2005 |
| **Language** | Catalan, English, French, German, Italian, Portuguese and Spanish | |
| **Target population** | Coaches/trainers and athletes | Elite athletes; patients; people with an illness, disorder or clinical condition; injured athletes |

| | | |
|---|---|---|
| **Age** | Adults (18 years and older) | Under 18 years |
| **Type of sport** | Recreational, community and grassroots sport; organised sport, exercise and physical activity programmes. | High performance; sport as therapy, rehabilitation or recovery; non- or self-organised physical activity, recreation or leisure (not sport or exercise specific) |
| **Type of intervention** | Coaching; (educational) programmes that aim to promote mental well-being of coaches and/or athletes | No reference to coaching or coaches/trainers/facilitators; programmes that aim to promote physical activity levels |
| **Outcome (see also search strategies)** | Outcomes related to mental/psychological well-being or mental health; psychosocial outcomes (e.g. affect, psychological functioning, psychological needs, self-concept, resilience); mental health literacy, knowledge or awareness; mental health promotion; coach behaviour; coach-athlete relationship. | Outcomes related to performance; competition-related anxiety or stress; Injury or injury recovery; physical activity motivation and adherence; physical activity level; outcomes related to physical health or physical well-being or physical functioning; therapeutic outcomes; concussion; mental toughness (including winning mentality and desire). |

## 2.2. Information sources

Studies were identified by searching in the following electronic databases:

1. Cochrane Library (January 2005 – July 2020). Last search: 27.06.2020

Firstly, a wider / less specific search was done in the Cochrane library to identify possible systematic reviews already carried out on the subject. The screening of the results was done independently with regards to the other databases.

Afterwards final keywords' combinations were applied in three other databases, slightly modified due to the particular characteristics of every database (see more details in the appendix 1)

2. SportDiscus (January 2005 – August 2020). Last search: 10.07.2020
3. PsychInfo (January 2005 – August 2020). Last search: 10.07.2020
4. PsychArticles (January 2005 – August 2020). Last search: 10.07.2020

The limits of the search, such as the languages included, the date of the publications considered, etc., are detailed in the eligibility criteria section.

## 2.3. Search

The specific search in each of the four databases used is detailed in appendix 1, which defines the combination of keywords used, the search fields and the established limits for every search separately.

As an example, the keywords combination used in the database SportDiscus is outlined in Table 2:

**Table 2: Keywords combination used in the database SportDiscus**

| |
|---|
| sport* OR "physical activit*" OR exercise* OR danc* OR "physical culture" OR fitness OR player* OR *athlet* OR running OR runner* OR jumper* OR archer* OR badminton OR baseball OR softball OR basketball OR boxing OR boxer* OR canoe* OR cycling OR cyclist* OR diving OR diver* OR equestrian OR rider* OR fencing OR fencer* OR football OR soccer OR golf* OR gymnast* OR handball OR *hockey OR judo* OR karate* OR biathlon OR triathlon OR pentathlon OR rowing OR rower* OR rugby OR sailing OR sailor* OR shooting OR shooter* OR skateboard* OR skater* OR climbing OR climber* OR surfing OR surfer* OR swimm* OR *tennis OR taekwondo OR trampolin* OR *volleyball OR "water polo" OR weightlift* OR wrestl* OR skiing OR skier* OR snowboard* OR bobsleigh OR *skating OR curling OR luge OR "basque pelota" OR "martial art*" OR yoga |

| |
|---|
| AND |
| "mental* wellbeing" OR "mental* well-being" OR "emotion* wellbeing" OR "emotion* well-being" OR "Psychosocial* wellbeing" OR "Psychosocial* well-being" OR "Psycho-social wellbeing" OR "Psycho-social well-being" OR "Psychological wellbeing" OR "Psychological well-being" OR "cognitive wellbeing" OR "cognitive well-being" OR "spiritual wellbeing" OR "spiritual well-being" OR "self-perception" OR empath* OR "affect* valence" OR "affect* balance" OR happiness OR "life satisfaction" OR coping OR optimism* OR hopefulness OR assertiveness OR "stress management" OR "work life balance" OR "self-esteem*" OR self confidence OR "self-worth" OR "sense of coherence" OR resilience OR hardiness OR "self-efficacy" OR "sense of mastery" OR "sense of personal control" OR empowerment OR "quality of life" OR "emotional skill*" OR "emotional intelligence*" OR "emotional adjustment" OR "emotional control" OR "positive emotion*" OR "internal external locus of control" OR "self control" OR "interpersonal control" OR safeguard* OR connectedness OR connective OR "mental* health" |
| AND |
| coach* OR training OR trainer* OR facilitat* OR mentor* OR intervention* OR program* OR club* |
| NOT |
| rehabilitat* OR therap* OR treatment* OR patient* OR "medical care" "elite athlet*" OR "elite player*" OR "high performance" OR "elite sport*" child* OR minors |

## 2.4. Study selection process

The eligibility criteria were decided together by Detlef Dumon, Anne Schomöller and María Rato Barrio (MRB), on the basis of the topics proposed in the SPIRIT project by all partners.

MRB then conducted the search in the four different databases. Following this, MRB and Clemens Ley (CL) both independently screened the resulting titles and abstracts. They also independently screened the resulting 282 full text in an unblinded standardised manner. Any discrepancy was discussed and resolved by consensus.

## 2.5. Data collection process

MRB and CL independently assessed all papers and extracted the data.

Like O'Driscoll et al. (2013), no formal assessment of methodological quality of individual studies has been undertaken in this review. This decision has been made due to the great breadth and enormous heterogeneity of the topic. To make this decision, we took one particular objective of the SPIRIT project (within the framework of which this review was conducted) into account, which is to build an (online) education tool for sports coaches. For this reason, we prioritised displaying the heterogeneity of issues to consider for such a tool.

Based on the PRISMA recommendations, a document was created with the following criteria for the data extraction:

- ☐ Complete reference: author, year, title, etc.
- ☐ Reason for exclusion, if applicable
- ☐ Cluster/s in which the study fits (due to the enormous heterogeneity of the topic, the papers were classified into different clusters, and some of this clusters, due to time constraints, were excluded from the scope of this review).
- ☐ Theme: Within every cluster, different themes have appeared (see figure 3) in the Outcomes' epigraph.
- ☐ Objective/s of the study
- ☐ Study design
- ☐ Sample: size (N/n); type of participants (coaches, athletes, etc.); gender (% female/male); age (range, mean and standard deviation), sport/s performed by the participants; level of the performance
- ☐ Country of study
- ☐ Intervention, setting and time frame
- ☐ Categories analysed and measurement instruments
- ☐ Key findings
- ☐ Comments

# 3. RESULTS

## 3.1. Study selection

**Error! Reference source not found.** illustrates the PRISMA 2009 Flow Diagram with the search screening process:

**Figure 1: Search screening process (PRISMA Flow Diagram)**

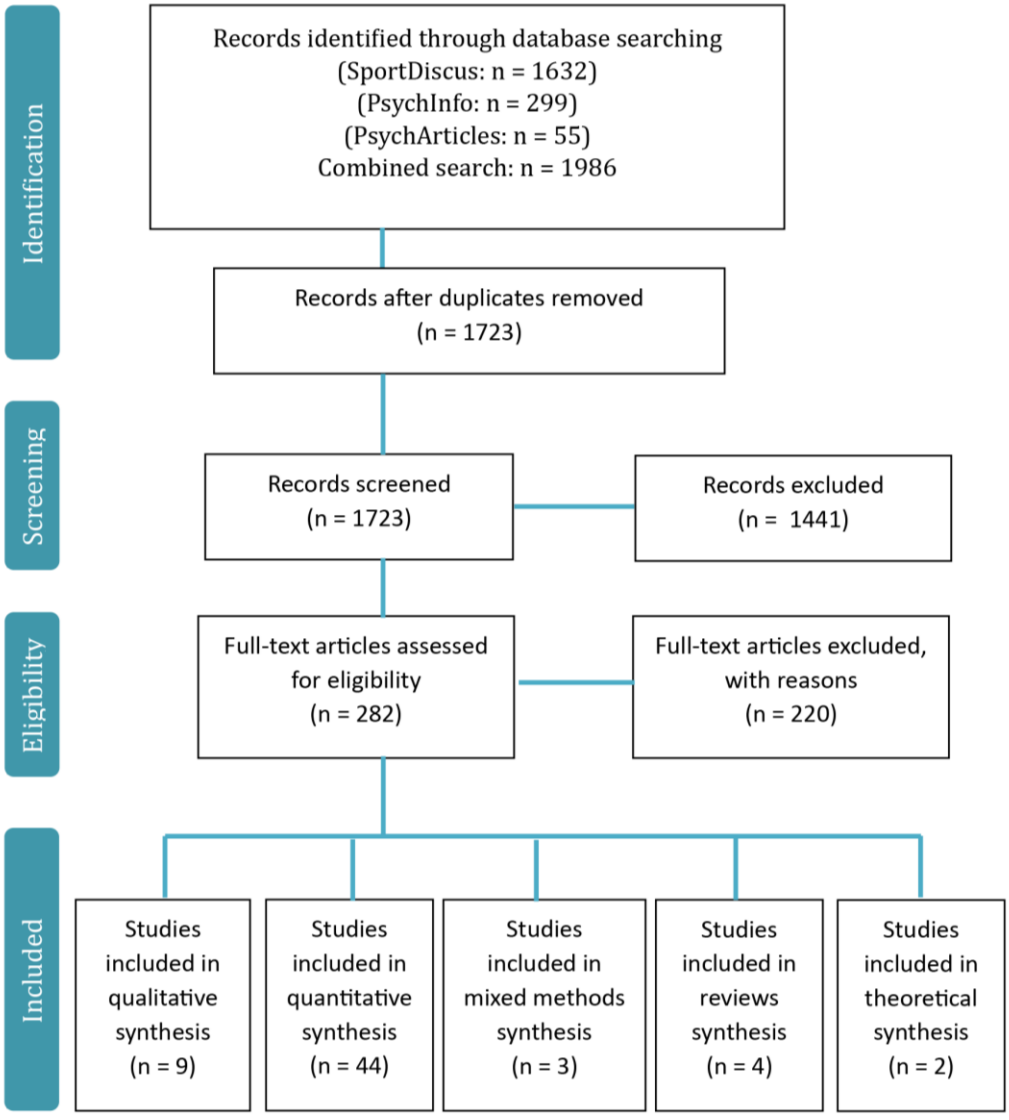



Table 3 below summarises the reasons for exclusion and the number of papers excluded for each of these reasons. Appendix 2 lists all excluded papers and the reasons for their exclusion.

From the 1723 records screened 282 were eligible for full text assessment. These 282 full-text articles were assessed using the inclusion and exclusion criteria (see Table 1) and classified into different thematic clusters (see

Figure ). Due to the great breadth and enormous heterogeneity of the topics, we excluded some clusters (marked with the dotted line in

Figure ) that were not primary central to the research questions and that were covered by other systematic reviews (Bissett et al., 2020; Breslin, Shannon, et al., 2017a; Chen et al., 2020; Di Lodovico et al., 2019; Goodger et al., 2007; Hwang et al., 2013; Laborde et al., 2016; Langan et al., 2013a; Lentz et al., 2018; Li et al., 2013; Liddle et al., 2017; Machado, 2017; Magrum et al., 2019; Marques et al., 2019; Mason & Holt, 2012; Norris et al., 2017, 2020; Rice et al., 2016, 2018; Sønderlund et al., 2014; Trott et al., 2020; Wyatt et al., 2013; Yrondi et al., 2017).

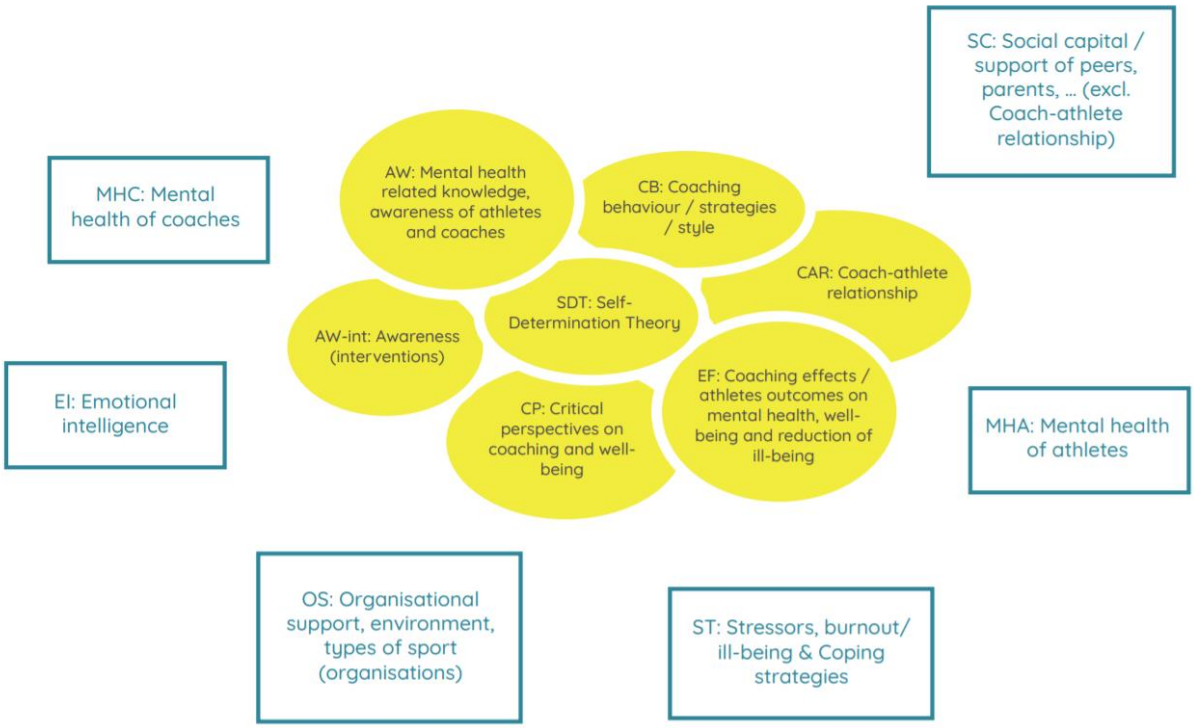
The seven remaining clusters were re-organised during the synthesis process, resulting in four final clusters. Thus, in this review we include the four clusters shown in Table 4, which shows also the number of studies included in every cluster.

**Table 3: Summary of reasons for exclusion**

| Reason of exclusion | Number of studies excluded |
|---|---|
| Excluded cluster* | 118 |
| Out of scope | 56 |
| Age of participants | 24 |
| Level of performance | 5 |
| Paper type | 9 |
| No full text available | 9 |
| **TOTAL** | **220** |

*exclusion due to not being primary central to the research questions and that were covered by other systematic reviews

**Figure 2: Clusters of the 282 full-text articles**




Note: Clusters in boxes were excluded from further analysis.

**Table 4: Clusters included in the review and number of studies**

| Clusters included in this review | Number of papers included |
|---|---|
| Awareness and mental health literacy | 10 |
| Coach-athlete relationship | 19 |
| Coaching behaviour | 21 |
| Critical perspectives | 12 |
| **TOTAL of papers included** | **62** |

## 3.2. Study characteristics

Appendix 3 shows the study characteristics (reference; objective of the investigation; study design; sample (specifying the sample's size, type of participants, gender, age -range, mean and standard deviation-, sport/s performed and level of performance); country where the study was undertaken; and intervention carried out) of the 62 papers included, differentiated by cluster.

### 3.2.1. Sample/participants characteristics

The review included coaches (n = 7787) and athletes (n = 10118). Studies were normally gender-mixed, with eight exceptions of which five were studies with a 100% female sample and 3 had a 100% male sample. The age range is 18-80, including the total period of adulthood and older adulthood. The samples included sport coaches and participants from a very wide range of individual and team sports and all levels of participation. Only when the sample group consisted of more than a third of high-level athletes, the study was excluded.

The studies were from a very broad sample of countries: The majority are from the United Kingdom (n=25) follow by the United States of America (n=12) and then, by Australia (n=5), Canada (n=4) and Spain (n=4). We also found a couple of studies from Norway (n=2) and Belgium (n=2). France (n=1), Hungary (n=1), Ireland (n=1), Lithuania (n=1), Sweden (n=1), Switzerland (n=1) and the Netherlands (n=1) in Europe; Japan (n=1), Singapore (n=1) and China (n=1) in Asia; and New Zealand (n=1) in Oceania, were also represented.

### 3.2.2. Method characteristics

As showed in Tables 3, 4, 5 and 6, the review included a total of 44 quantitative research studies, 9 qualitative studies, 3 used mixed methods, 4 reviews and 2 theoretical papers. The final selection of literature content mainly included cross-sectional studies (n= 34), particularly to test predictors of athletes' outcomes and process models, analysing the paths from coaches characteristics, coaching behaviour and coach-athletes relationship to athletes' well-being. Furthermore, 9 longitudinal studies were included, involving one randomised controlled trial. These studies primarily investigated interventions or programmes that aimed at promoting awareness or well-being among coaches or athletes/sport participants. The duration of the investigated interventions was very heterogeneous, from a few hours to a year.

The qualitative studies used different ontologies and approaches, including constructivist and post-positivist assumptions, grounded theory and phenomenological approaches.

### 3.2.3. Research instruments

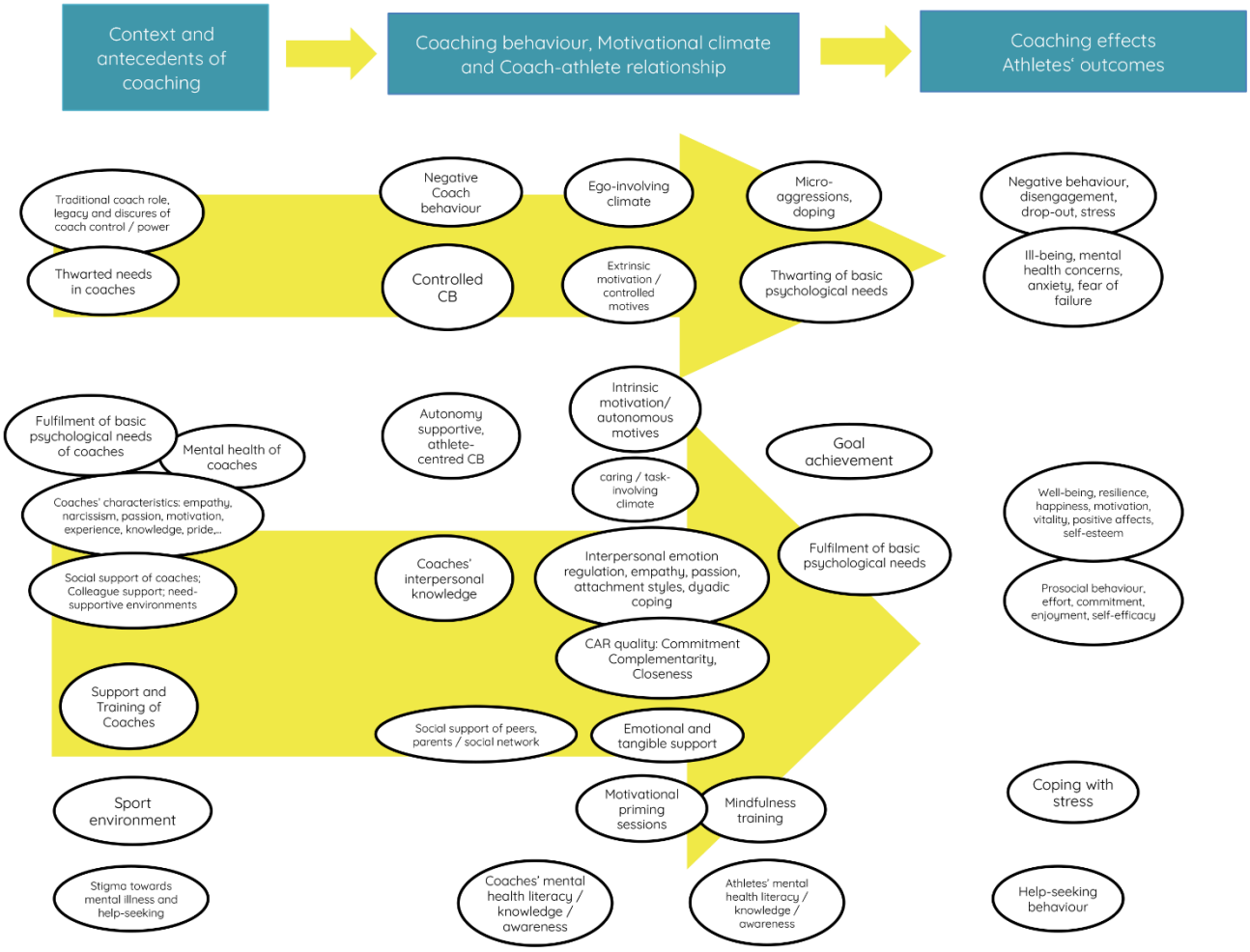
The appendices 4, 5, 6 and 7 show the different variables and categories analysed and the measurement/research instruments used, differentiated by cluster.

Validated questionnaires were the most common research instruments of the quantitative studies.
The qualitative studies used mostly interviews, focus groups, field diaries and observation. Qualitative data analysis often included thematic analysis.

### 3.2.4. Outcomes

Figure 3 illustrates the themes found. The results of these themes are presented in the section Synthesis of results.

**Figure 3: Conceptual map of themes according to coaching context, behaviour and outcome on mental well-being**




## 3.3. Results of individual studies

The appendixes 4, 5, 6 and 7 show the key findings of individual studies as reported by their authors, differentiated by cluster.

## 3.4. Synthesis of results

Regarding coaching and well-being, this review covers broadly five themes:

1. Coaches' behaviour in relation to the satisfaction of the basic psychological needs, based on the self-determination theory, and antecedents and consequences of coaching behaviour on well-being.
2. Coach-athlete relationship, in regards to need satisfaction

3. Critical perspectives: harm to athletes' well-being and negative aspects of/in coaching
4. Programmes for the promotion of mental health literacy and awareness

### 3.4.1. Coaching behaviour: Autonomy-supportive and needs satisfaction

The studies mostly analysed the effects of autonomy-supportive versus controlled coaching behaviour on the satisfaction versus thwarting of the basic psychological needs of adults athletes. Theoretical foundations of autonomy support coaching are the self-concordance model and the self-determination theory with its sub-theories on motivational regulation and basic psychological needs.

> The **Self-Determination Theory** (SDT) (Deci & Ryan, 2000; Ryan & Deci, 2000) is profoundly based on the satisfaction of needs and self-determined motivation to explain human behaviour. SDT relates to three **basic psychological needs**, i.e. autonomy, competence and relatedness. The need for **autonomy** refers to perceive oneself as a causal agent of own life and having choices. The need for **competence** refers to experiencing mastery and perceiving one's own behaviour as effective. **Relatedness** refers to the need for social connectedness and interaction. Satisfaction of these needs is associated with mental well-being; meanwhile, needs thwarting is related to ill-being.
>
> **Autonomy-supportive** climates/environments promote the person's intrinsic motives and goal contents, autonomous forms of behavioural regulations and self-determined motivation. These climates favour the satisfaction of needs. In contrast, **controlling environments** favours extrinsic goal contents and non-autonomous forms of behavioural regulation. These climates impede self-determination and satisfaction of needs, thus increase thwarting of the needs and ill-being.

The studies in this field mostly use standardised questionnaires in a cross-sectional design, examining theoretical models, paths and associations among the variables.

Experimental studies that show a cause and effect relationship are widely missing in this field.

Bartholomew et al. (2011) demonstrated in a cross-sectional study that athletes' perceptions of autonomy-supportive coaching behaviour predicted need satisfaction, which in turn predicted positive outcomes (i.e. vitality and positive

affect[2]). Controlled coaching behaviour leads to need thwarting, which in turn predicted maladaptive outcomes (i.e. disordered eating, burnout, depression, negative affect, physical symptoms, and perturbed physiological arousal) (Bartholomew, Ntoumanis, Ryan, et al., 2011). Amorose & Anderson-Butcher (2007) endorse that the athletes' perceptions of autonomy-supportive coaches predicted the athletes' perceived competence, autonomy, and sense of relatedness, which, in turn, predicted their motivational regulation (i.e. autonomous motivation). The authors also showed that these associations were invariant across gender and level of competition. Balaguer et al. (2008) confirm these associations and further add to the previous authors to say that autonomous motivation is associated to greater self-esteem and life satisfaction. This is in line with the results of Blanchard et al. (2009), who showed that need satisfaction, particularly of autonomy predicts perceived self-determination, which in turn relate to greater sport satisfaction and positive emotions in sports. Hodge & Lonsdale (2011) showed that autonomous motivation mediates the effect of autonomy-supportive coaching on athletes' prosocial behaviour towards teammates. In contrast, controlled coaching behaviour relates to antisocial behaviours towards teammates and towards opponents; mediated by moral disengagement.

Torregrosa et al. (2014) corroborated the above mentioned results among healthy, non-competitive exercise participants: autonomous support predicted life satisfaction positively and controlling coach behaviour predicted life satisfaction negatively. Wayment and McDonald (Wayment & McDonald, 2017) analysed needs satisfaction in a personal fitness training programme, which was conducted in a small-group training environment. Need satisfaction was associated with life satisfaction and with autonomous motivation for exercise; the latter was associated with exercise self-efficacy. Borges-Silva et al. (2017) investigated needs satisfaction in women attending fitness classes. Satisfaction of the needs for autonomy, competence and social relatedness positively predicted autonomous motivation, which in turn predicted self-esteem and satisfaction with everyday life.

Besides confirming that coach behaviours are related to needs satisfaction and thwarting, Healy et al. (2014) showed that needs satisfaction was related to **autonomous goal motives**, which in turn related positively to well- and negatively to ill-being, and to goal attainment. Needs thwarting was associated with controlled motives, which related only to ill-being. Smith et al. (2007) also confirm that autonomy supportive coach behaviour predicts autonomous motives and satisfaction of the basic psychological needs. Furthermore, autonomous goal motives relate to effort; effort to goal attainment; goal attainment to need satisfaction; and need satisfaction to psychological well-being. Effort and need satisfaction mediated the relationships between autonomous motives and goal

[2] "Positive affect refers to the extent to which an individual subjectively experiences positive moods such as joy, interest, and alertness" (Miller, 2011).

attainment, and between attainment and well-being (A. Smith et al., 2007). In another study, Smith et al. (2010) provides further support for the role of goal motives: "The motives underlying an implementation intention were found to mediate the paths from goal motives to well-being" (p.17). Finally, Smith et al. (2010, p. 31) recommends: "Coaches should use behaviours that support their athletes' autonomy in relation to their personal goals. For example, such behaviours can be demonstrated by providing a sense of choice and adopting their athletes' perspectives, while also avoiding behaviours, such as the use of controlling language, which may exert external, or encourage internal, pressures".

While self-determination theories consider need satisfaction as universal and essential for well-being for everybody, Schüler et al. (2016) showed that individuals' implicit disposition towards autonomy influence the degree to which people benefit from autonomy need satisfaction. "A strong implicit autonomy motive disposition derived more flow experience from felt autonomy than individuals with a weak implicit autonomy disposition". Furthermore, they revealed that "perceived autonomy support from sports coaches, which we experimentally induced with a vignette method, leads to autonomy satisfaction, leading in turn to positive effects on well-being. This indirect effect held at high and average but not low implicit autonomy disposition" (Schüler et al., 2016, p. 5).

Appleton and Duda (2016) showed the interaction of an empowering and disempowering climate in predicting enjoyment, accomplishment and physical symptoms. The authors conclude with practical implications for coach education and call for programmes that promote empowering climates and reduce disempowering climates. Breske et al. (2017) focused on coping possibilities in ego-involving climate and showed positive effects of a motivational priming session on cortisol responses, as a marker of psychophysiological stress.

In conclusion, autonomy-supportive coach behaviour favours task-involving and empowering climates, autonomous goal motives and attainment, need satisfaction and finally increased well-being. In contrast, controlled coach behaviour favours thwarting of basic psychological needs, disempowerment and ego-involving climates and thus, rather ill-being. While there is strong agreement of the importance of autonomy-supportive coach behaviour, less is known on the antecedents for autonomy-supportive coach behaviour and the context in which it can take place. The latter is an important issue as the coaching context is not necessarily and traditionally autonomy supportive (cf. Denison et al., 2017), as we show later in the section on critical perspectives. Thus, in the following, we present studies on the antecedents and the context of participation coaching to promote autonomy support in adults.

Several antecedents and coaches' characteristics are studied in relation to autonomy-supportive versus controlled coaching behaviour. Matosic et al. (2017) showed a positive direct relation between coaches' narcissism and controlling coach behaviour. In addition, a positive and negative indirect relation between **narcissism** and coach behaviour (controlled and autonomy-supportive, respectively) was mediated by empathy. Furthermore, Matosic et al. (2016) showed an additional, indirect effect of coaches' narcissism on athletes' reports of needs frustration. Needs frustration had a mediating role on the relation between perceived controlling behaviours and athletes' attitudes toward doping (Matosic et al., 2016). Lafrenière et al. (2011) showed that harmonious **passion** predicted coaches' autonomy-supportive behaviours, whereas obsessive passion predicted controlling behaviour.

The coaching environment impacts on the satisfaction or thwarting of psychological needs of the athletes, as we have seen above. The coaching environment also impacts upon **coaches' mental health**, which consequently influence coaches' interpersonal behaviour towards athletes (Stebbings et al., 2012). Stebbings et al. (2011) highlighted the importance of a coaching environment that facilitates **coaches' psychological need satisfaction** and well-being, as coaches' well-being was associated with autonomy support toward the athletes. Coaches' competence and autonomy need satisfaction predicted their positive affect and subjective vitality. Opportunities for professional development, job security and work-life balance predicted coaches' need satisfaction (Stebbings et al., 2012). Stebbings et al. (2015) differentiated among **hedonic** and **eudaimonic** indicators of psychological **well-being** of coaches and their effects on coaches' behaviours. **Positive affects** (as a hedonic indicator) of coaches were related to the provision of autonomy support, whereas negative affects were related to experiences of coaches' control. According to the authors "a coach who becomes more irritable and upset (for example), may be more likely to criticise, intimidate, and coerce their athletes" (Stebbings et al., 2015, p. 46). Thus, coaches need to be aware of their own affective states and how these influence their coaching behaviour. Emotional regulation and mindfulness training could be included in training coaches. Coaches' working environment could be examined to be supportive to the hedonic well-being of the coach. In regards to the eudaimonic well-being, which is also related to more autonomy support, the authors argue that: "when coaches experience a sense of congruence between their coaching role and their personal values, this may empower them with more energy to invest personal time and effort into that role. This implies that performance directors, head coaches and other employers of coaches should allow coaches the freedom to express their ideas and work in accordance with their values and beliefs. This can be achieved by providing choice and avoiding strict regulation of management and leadership strategies" (Stebbings et al., 2015, p. 47).

Alcaraz et al. (2015) investigated the role of coaches' motivation for coaches' need satisfaction and well-being. **Motivation** mediated only the effects of satisfaction of

the need for relatedness and of thwarting of the basic psychological needs on coaches' well-being. Thus, the authors conclude that it is necessary to promote self-determined motivation as well as need satisfaction and to avoid (or at least) reduce need thwarting, of coaches too. Norris et al. (2017) confirmed in their systematic review the importance to avoid needs thwarting, as coaches' well-being is endangered by occupational stressful experiences, traumatic events and a variety of performance-related, organisational, contextual, interpersonal, and intrapersonal stressors.

In conclusion, increasing coaches' needs satisfaction is considered crucial for the mental well-being of coaches and of athletes. Therefore, intrinsic motivation and autonomy-supportive environment and coaching behaviour are favourable. In turn, needs thwarting and coach control have to be avoided, as this is related to negative outcomes on coaches' well-being and to controlled coaching behaviour.

### 3.4.2. Coach-athlete relationship (CAR)

The systematic review yielded 19 studies on the coach-athlete relationship (CAR) with regards to mental well-being/health. It includes 15 cross-sectional studies, two longitudinal studies, one qualitative multiple case study and one interpretivist.

Nicholls et al. (2016) analysed the association of the coaching behaviour - as perceived by the athletes -, with the **coach-athlete relationship quality** (the 3C's: **closeness**, **commitment** and **complementarity**) and athletes' stress appraisal and coping mechanisms. Their analysis provides support for the positive influence of **supportive coach behaviour** on the CAR. Furthermore, **closeness** in CAR was associated with challenge appraisals positively and with threat appraisals negatively. However, rather surprisingly, **commitment** in CAR was positively associated with threat. The authors indicated that "Although it is important that both the coach and the athlete are committed to the relationship, coaches could speak to their athletes and provide re-assurances about factors that might cause threat (e.g. the outcome of competitions) in highly committed coach–athlete relationships" (p. 25).

Similarly, Sagar & Jowett (2015) analysed the quality of **coach-athlete relationship** with regards to fear of failure. They conclude that "the development of quality relationships characterised by affective closeness, commitment, complementary transactions and empathy, as well as the possession of self-control are key factors in reducing fear of failure among athletes" (Sagar & Jowett, 2015, p. 17). The advice that "the greater the commitment and empathy athletes perceive within their relationships with their coaches, the less likely they are to fear that their coach will lose interest in them when they fail a task. Finally, athletes who perceive their coach

to be empathic towards them are less likely to experience fear or shame and embarrassment upon failure“ (Sagar & Jowett, 2015, p. 17).

Davis & Jowett (2014) analysed the associations of athletes' **attachment styles**, relationship quality with the coach and athletes' feelings of positive and negative **affect**. Structural equation modelling analysis showed that the secure attachment style was positively associated with social support and relationship depth, and negatively associated with interpersonal conflict; and furthermore the negative influence of interpersonal conflict on athletes' affect. Felton & Jowett's study (2013a), which was guided by the attachment theory and self-determination theory, points in the same direction. They showed that the relationship between attachment style and well-being was mediated by the athletes' **need satisfaction**. This is an important point as "even athletes with an avoidant attachment style are more likely to feel that their potential is realised if their needs are satisfied within the coaching relational context" (Felton & Jowett, 2013a, p. 62). In another study, Felton & Jowett (2015) showed that thwarted autonomy and competence needs mediated the relation between athletes' perceived insecure attachments to the coach and life satisfaction and negative affect. Furthermore, thwarted competence and relatedness needs mediated the relationship between athletes' perceived attachment style and experiences of performance satisfaction, life satisfaction, depression, and negative affect. In the same line of research, Felton & Jowett (2013b) showed the mediating role of the competence need and the effects of social environment of coaching on athletes' vitality, negative affect, and physical self-concept. They summarised that "athletes' perceptions of what coaches do, and how they relate, are important to their psychological needs satisfaction" (p.e130). The study of Felton et al. (2020) highlight the mediating role of the basic psychological needs satisfaction; need satisfaction mediated the effects of complementarity on vitality as well as on task and social cohesion. Blanchard et al. (2009) also point out the importance of cohesion[3]. Perceived cohesiveness positively predicted the satisfaction of the basic needs, particularly the relatedness need. Hence, these studies showcase the importance to consider the satisfaction of all three basic psychological needs (autonomy, competence and relatedness) in a coach-athlete relationship.

Studies on the coach-athlete relationship also address the interpersonal emotion regulation. Van Kleef et al. (2019) demonstrated how coaches' emotions (i.e. happiness and anger) influenced athletes' emotions in a higher recreational league. Braun et al. (2019) conducted a qualitative, longitudinal multiple case study with five cases; including in each case, one coach and two of his varsity sport athletes. They analysed the interpersonal **emotion** regulation (IER) in individual sports,

[3] "Social cohesion refers to the extent of connectedness and solidarity among groups in society. It identifies two main dimensions: the sense of belonging of a community and the relationships among members within the community itself."(Manca, 2014).

concluding a number of coaching strategies to regulate athletes' emotion; e.g. distraction, concentration, goal setting, relaxation, reappraisal, positive reinforcement and listening, but also yelling/guilt-inducing criticism. The latter seemed to improve performance. Furthermore, closeness within a coach-athlete dyad seemed to favour coaches' attempts to regulate their athletes' emotions, and viceversa (Braun & Tamminen, 2019).

Lafrenière and colleagues (2008, 2011) analysed the role of **passion** for sports for the coach-athlete relationship quality, using the Dualistic Model of Passion. Lafrenière et al. (2008) showed the mediating role of positive emotions for the effects of harmonious passion on the coach-athlete relationship quality, which in turn predicted coaches' well-being. Furthermore, Lafrenière et al. (2011) showed that harmonious passion predicted coaches' autonomy-supportive behaviours, which in turn predicted high quality coach-athlete relationships, resulting in athletes' general happiness.

While some studies investigate the CAR from a coach's perspective or an athlete's perspective, various studies have opted for a **dyadic approach**, investigating coach athlete pairs with an interpersonal perspective. Staff et al. (2017) describe the essence, antecedents (lock and key fit, friendship and trust, communication of the stressors) and outcomes (protection and support) of **dyadic coping**. Nicholls & Perry (2016) detected different perceptions between athletes and coaches. For example, relationship quality was particularly important for coaches, but less important for athletes.

In conclusion the studies showed that various aspects (coaching behaviour style, passion, attachment styles, interpersonal emotion regulation) influence positively and negatively upon the coach-athlete relationship quality and subsequently on the well-being of athletes and coaches.

**Support from sport-others (coaches and teammates)**

What others think about us is important to us. Trouilloud & Amiel (2011) conducted a study on athletes' reflected appraisals, defined as the perceptions of what other people, i.e. coach, teammates and parents think about us. They discuss that "when an athlete believes that coaches, parents, and teammates have a positive view of his/her competence in a particular sport, he/she also thinks that he/she has some abilities for this sport. It is interesting to notice that this result was still observed when controlling for athletes' age, sex, and competitive level. Athletes seem to consider those significant others as a credible source of information about their sport competence. During their numerous interactions, significant others may convey information to athletes about their capacity to accomplish tasks and achieve goals, notably through verbal and non-verbal feedback" (Trouilloud & Amiel, 2011, p. 13).

> **Social support** from significant others may promote well-being. Social support involves the following categories:
>
> *"**Informational support** refers to messages that include knowledge or facts, such as advice or feedback on actions. **Emotional support** is related to the expressions that include caring, concern, empathy, and sympathy. **Esteem support** is defined as the messages that help to promote one's skills, abilities, and intrinsic value. **Social network support** is defined as the messages that help to enhance one's sense of belonging to a specific group with similar interests or situations. Finally, **tangible support** is conceived as physically providing needed goods and services to recipients"*
>
> Ko et al., 2013, p. 195

Lu et al. (2016) showed that informational and tangible social support from coaches, together with athletes' resilience, moderated athletes' stress-burnout relationship in high and low life stress conditions. The authors suggest "coaches provide useful social support and foster athletes' resilience to prevent stress-induced burnout in athletes". Also Moen et al. (2019) highlight the importance of a strong working alliance between coaches and athletes to promote athlete resilience, which in turn prevents athletes' burnout.

Furthermore, Katagami & Tsuchiya (2017) showed that the support received from others influenced athletes' self-confidence, but in a different manner depending on its dimensions and providers. For example, in their study esteem support were effective for athletes' self-confidence independently, if provided by coaches or teammates; however, tangible support showed positive impact only if provided by teammates.

Besides the coaches and teammates (Katagami & Tsuchiya, 2017), peer mentors could be an important sources for support. Dorgo et al. (2009) compared physical fitness programmes for older people that were differently supervised (i.e. peer mentors versus students mentors). Although the study has its particularities that hinder generalisation to all adults and coaching context, the message they provide is an important one: "Support from peers is crucial for the promotion of mental well-being, thus coaches should be aware about the complementary and additional support of peers, which may differ from the coaches' support and coach – athlete relationship" (Dorgo et al., 2009).

Koh et al. (2019) investigated the social support strategies of coaches in university athletes. Their findings showed that "coaches from different sports shared similar strategies across emotional, esteem, informational and tangible dimensions, but with some distinguishable differences in the way these strategies were

implemented". The study provides important insights for coaches on how to incorporate these strategies into their coaching, thus to better support athletes' well-being. Furthermore, the authors advice that "coaches may be fully equipped with sport expertise, knowledge and social skills (informational resources); however, they may benefit from a holistic process of capacity-building program that can equip them with the necessary skills to provide emotional and esteem support to better support their athletes" (Koh et al., 2019, p. 691).

### 3.4.3. Critical perspectives: Harms to athletes' well-being and negative aspects of/in coaching

Based on Foucault, Denison et al. (2017) asks how to achieve the desired outcomes of autonomy-supportive and empowering coaching behaviour in a traditional controlled and disciplinary framework that normalises maximum coach control in sports. The authors argue that this change in coaching behaviour needs to be accompanied by changes to the power relations and by a critique of the sports' disciplinary legacy, which includes "techniques and instruments of discipline associated with the military, work and particularly the prison" (p. 780). "Given that power can be both restrictive and productive, and that discipline can be both limiting and enabling, it can be extremely challenging for a coach to begin coaching in a way that affords opportunity and choice when needed and constraint and control when needed" (p. 780). Thus, coaching differently requires one "to continually problematize what they do—the details of the practices they consistently follow, the types of relationships they form—and what they say—the metaphors, analogies and examples they use, the instructions they give, the questions they ask, the points they emphasize and of course the questions and points they do not ask or emphasize" (p. 780).

Negative effects of poor coaching are described by Gearity & Murray (2011). For example, athletes described how coaches were inhibiting athlete's mental skills by distracting, engendering self-doubt, demotivating, and dividing the team. Gearity & Metzger (2017) describe micro-aggressions in men's sport coaching at the intersection of sport coaching, mental health and social identities. Aicinena (2011) argues that coaches, athletes and parents exhibit hubristic pride that causes harm to others. Hillier et al. (2019) describe the coaches as the primary source of influence with regards to the rapid weight loss in professional and amateur mixed martial arts athletes, which has negative implications on the athletes' well-being.

Aggressiveness in sports is another critical point. Mickelsson (2020) reported increased aggressiveness in mixed martial arts (MMA) practitioners. The authors further argue that "modern martial arts and MMA may not be suitable for 'at-risk' youth to practice, whereas traditional martial arts and sports with a healthy

philosophical foundation may be effective in reducing antisocial behaviour while enhancing socially desirable behaviour among young people". In his study, Brazilian jiu-jitsu practitioners reported a decline in aggressiveness. Chinkov & Holt (2016) also investigated Brazilian jiu-jitsu. The qualitative study revealed that the acquisition of four life skills, which reflect values and characteristics of the sport, were important for changes in the lives of the interviewed participants, these are: respect for others, perseverance, self-confidence, and healthy habits. In addition to these values of the sport, head instructors and peer support played a central role for building a safe and disciplined atmosphere for learning life skills implicitly. The motto "to train like a team and fight like a family" (p. 49), expressed by a head instructor, is instrumental in showing that a safe environment and a value-based sport practice are crucial for attaining positive outcomes and for the prevention of negative behaviours, such as aggressiveness.

Stefansen et al. (2019) conducted twenty gender-mixed focus group interviews with sport students, using four short films as a common starting point for exploring their thinking about **coach-athlete sexual relationships** (CASRs). On the one side coach-athlete sexual relationships are viewed as ethically problematic and on the other side as acceptable. The findings revealed that "three different ethics were activated in the interviews: the safeguarding, love, and athletic-performance ethics". Finally, the authors offer thoughts for sporting organisations' prevention efforts.

Soulliard et al. (2019) derived various implications for coaches from their quantitative cross-sectional study on the role of **body image** and body appreciation in sports. They advise "to encourage a culture that focuses less on body appearance and more on cultivating positive body image" and "to deliver messages of appreciation for their athletes' bodies with a particular focus on how their bodies allow them to perform successfully in their sport". The importance of body satisfaction for health (sense of coherence) is also stressed by Dumčienė (2015), who showed that "after six months of regular fitness classes women's satisfaction of their body and their sense coherence level improved significantly. Furthermore, Hõs (2005) showed that a "one year long systematic aerobic dance programme had a positive effect on self-image, self-esteem, physical condition, and an evaluation of the environment of middle-aged women. On the basis of the results we may conclude that an improved body image can positively influence and stabilise self-esteem. Furthermore, we may assume that the improved self-esteem and self- image can contribute to an improvements of quality in the lives of middle-aged women and it may compensate for the negative effects of the menopausal period" (Hõs, 2005). The findings of Huberty et al. (2008) point in the same direction, who recommend "improving or deemphasizing body image" in order to improve self-worth among women, which is ultimately crucial for promoting adherence to physical activity.

### 3.4.4. Programmes for the promotion of mental health literacy and awareness

The above summaries of studies on the effects of coaching behaviour and coach-athlete relationship on adults' well-being call for the provision of further training of coaches. In the following, we first reviewed studies on coach education with the final aim to improve well-being of athletes, and secondly studies on programmes aiming to increase mental health literacy or awareness either of coaches or directly of athletes.

In a review on the effectiveness of interpersonal coach education interventions on athlete outcomes, Langan et al. (2013b) referred to the coaches effectiveness model (Cote & Gilbert, 2009), focusing on the interpersonal knowledge of the coach and subsequent effects on the coach-athlete relationship and athletes' outcomes. The studies they reviewed were mainly based on the coaching effectiveness training (CET) and the achievement goal theory (AGT). Besides indicating a current paucity of empirical data, they conclude potential effects of the coaches' education on several athletes' outcomes such as self-esteem, anxiety, fear of failure and motivational orientation. Finally, they recommend the self-determination theory as "a useful framework to explain the influence of coaching on athlete outcomes" (Langan et al., 2013b, p. 47). Boardley et al. (2008) also focused on **coaching effectiveness** and athlete related outcomes. The findings revealed that athletes' perceptions of *motivation effectiveness* predicted effort, commitment, and enjoyment. Further, perceptions of *technique effectiveness* predicted self-efficacy, while perceptions of *character-building effectiveness* predicted prosocial behaviour (Boardley et al., 2008).

Breslin et al. (2017b) synthesised quantitative studies on interventions that aim to promote **mental health awareness** and **well-being in coaches and athletes**. The review included a substantial heterogeneity of studies (with limited validity of measures), participants and interventions. Nevertheless, they portray some potential effects of interventions on mental health knowledge, stigma, referral efficacy, help-seeking intentions and behaviour, and well-being outcomes (self-concept, depressive symptoms, negative affect, mental toughness, relationship and substance abuse). The authors finally call for evidence and theory-based intervention programmes designed to increase mental health literacy and to promote the well-being of athletes, coaches and officials. They recommend using psychological theories, specifically, the Self-Determination Theory (Ryan & Deci, 2000) and the Theory of Planned Behaviour (Ajzen, 1991) for designing such interventions.

Liddle et al. (2017) reviewed **sporting organisations' websites** addressing mental health. Their findings showed that mental and psychological aspects are mentioned

few times and rather in relation to competitiveness than to mental well-being or potential mental health problems. The authors however argue that it would be crucial for sport bodies to provide accurate information on websites and media coverage on mental health for creating awareness, showing acceptance and reducing stigma. This in turn may allow sport participants to disclose and speak about challenges and problems, and seek further support. Furthermore, the review revealed few sporting bodies describing initiatives to address mental health problems. The described programmes and campaigns "are often 'one-off' initiatives and lack long-term strategic direction" (Liddle et al., 2017, p. 99), are not evaluated or evidence- or theory-driven. Finally, Liddle et al. (2017) reported that the coach education and training guidelines they reviewed did not contain specific mental health content. The authors, therefore, propose some strategies to:

- create a sport environment that is conducive to promoting psychosocial competence and well-being, including, for example, a coach-created positive motivational climate and mental health informed parents;
- provide mental health education to athletes, increasing knowledge, attitudes and behaviour (mental health literacy / awareness) and reducing stigma;
- support coaches (e.g. through coach education) to offer support to athletes at risk of mental health problems and to promote help-seeking behaviour and referral to professional treatment (Liddle et al., 2016).

Our review furthermore included some studies which evaluated courses, modules or programmes for improving **coaches'** mental health literacy, including the knowledge on mental health and illness, less stigmatising attitudes, confidence to be able to help others, and referral and support – seeking intentions (Anderson & Pierce, 2012; Bapat et al., 2009; Kroshus et al., 2019; Pierce et al., 2010). While the intervention studies showed improvements in coaches' mental health literacy, these studies also noted "limited evidence … to support the assumption that, following training, individuals will help others experiencing mental ill health" (Anderson & Pierce, 2012, p. 258). Pierce et al. (2010) included in their study not only the Club leaders who were trained in mental health first aid (n = 36), but also the club players who were not trained (n = 275). While they conclude that rural football clubs provide appropriate social structures to promote mental health awareness and the mental health first aid training of club leaders improved skills of coaches, indirect benefit to club players from this approach seemed limited as minimal changes in attitudes were reported by players" (Pierce et al., 2010, p. 1). Bapat et al. (2009) analysed the Read the Play Programme, a mental health literacy training delivered to volunteer sport coaches and leaders, including senior as well as junior players and parents and coaches. After having received the training, the participants provided an information session, disseminating the knowledge within their clubs. The pre- and post- test study revealed significant improvements in knowledge about mental disorders, increased confidence in helping someone with a mental disorder

and more positive attitudes towards people with mental disorders (Bapat et al., 2009). The authors also conclude that "future evaluations would benefit from assessing whether these changes are sustained over time and whether trainees subsequently assist young club members to seek appropriate professional help" (Bapat et al., 2009, p. 475). Thus, the transfer of benefits following mental health literacy training of coaches or sport leaders to sport participants is unclear and challenges the practitioners who design and implement such trainings and the coaches as well as the researchers to explicitly stimulate and investigate this transfer of benefits.

Breslin, Haughey, et al. (2017) conclude from their quasi-experimental trail and additional focus groups that a short mental health awareness programme can improve knowledge and intentions, and that sport clubs offer a natural environment with already established social networks for delivering these programmes. However, the programme contents should be adapted to the sporting environment, containing sport-related examples (i.e. case studies, videos, etc.) and facilitating discussion on mental health in the sporting context (Breslin, Haughey, et al., 2017). Kroshus et al. (2019) analysed the *Supporting Student-Athlete Mental Wellness* online module for coaches, which addresses: "1) signs and symptoms of mental illness; 2) the role of the coach in creating a team environment supportive of mental health care seeking; 3) the role of the coach in encouraging care-seeking and providing emotional support to a student-athlete who is struggling with a possible mental health problem; 4) how to identify and respond to non-emergency and emergency mental health situations; 5) coach stigma about athletes seeking mental health care" (Kroshus et al., 2019, p. 671). The findings suggest that after completing the module coaches showed an increased mental health literacy, decreased stigma and increased intentions, which is valued by the authors as "a good start for coach education about mental health; however, additional modifications may be warranted to the extent coach referral to sports medicine staff or provision of emotional support to student-athletes struggling with mental health concerns are considered desired behaviors" (Kroshus et al., 2019, p. 668). Halterman et al. (2020) interviewed college football coaches. They describe that the interviewed coaches were aware of stigma associated with seeking psychological training and help with mental health problems. However, they spotted misunderstandings of coaches concerning confidentiality, related worries and environmental barriers that hinder accessing mental health services and sport psychology consultants.

In conclusion, mental health literacy or awareness programmes appear deficient in regards to their specificity to the sporting context, clarity on the transfer of benefits to the athletes, and effectiveness on athletes' outcomes such as help-seeking behaviour and referrals to professional support.

# 4. DISCUSSION

## 4.1. Summary of evidence

This review focused on *participation coaching* of adult sport participants in grassroots, community and club sports, which includes – apart from recreation – sport performance and competition elements. By doing so, we aim to contribute to a new capacity building approach for coaches to develop a holistic health-enhancing physical activity/sport offer for adults.
In the following, we address the various questions of the study:

### 4.1.1. Which aspects of mental well-being are addressed in the studies on grassroots' organised Sport and physical activity coaching for adults?

The different studies measured the outcome of mental well-being in quite different ways. The main indicators for mental well-being often included happiness, (life) satisfaction and resilience as well as self-esteem, self-concept, self-confidence, self-efficacy and body image/satisfaction. Stebbings et al. (2015) differentiated between *hedonic* well-being, which particularly refers to positive affect, happiness or pleasure, and *eudaimonic* well-being, which is defined as self-actualization, personal growth and congruency between personal and occupational roles, values, beliefs and identity (Ryan & Deci, 2001). A few studies used other concepts, such as flow experience or sense of coherence, to indicate mental well-being. Some studies measured the negative outcomes on well-being (ill-being) through the prevalence of disorders, burnout, depression, anxiety and fear of failure, and negative affect. Blood cortisol levels were also used as a marker of psychophysiological stress. Aspects relating to the social well-being were prosocial and antisocial behaviour and social cohesion.

Furthermore, the basic psychological needs (i.e. sense of autonomy, competence and relatedness) are related to well-being through the self-determination theory. Effort, commitment and enjoyment were used for positive coach-athlete relationship outcomes, and closeness, commitment and complementarity as indicators of coach-athlete relationship quality. Studies on mental health promotion programmes appraised outcomes on mental health/illness-related knowledge, awareness, stigma, referral efficacy, help-seeking intentions and behaviours as well as mental health literacy (i.e. abilities, knowledge and beliefs/attitudes/motivation).

### 4.1.2. Which types and aspects of the delivery of grassroots' organised sport and physical activity coaching are investigated with regards to the promotion of adults' mental well-being?

**Studies on the frequency and duration of programmes**

Most of the studies were cross-sectional studies. Longitudinal studies were mostly about programmes that aimed to promote mental health literacy or awareness. The durations and frequencies of the mental health programmes for coaches and for athletes varied in length and frequency, but in most cases the duration was short and the frequency for the participant was limited to a few sessions. The goals and contents differed as well. Therefore, no conclusion can be drawn on recommended frequency and duration of such programmes from this review.

**Studies on characteristics of the coaching style / coaching approach / strategies**

The effects of autonomy-supportive (empowering) versus controlled (disempowering) coaching behaviour is well analysed in various studies. The studies in this field are mainly cross-sectional, analysing associations of the coaching behaviour with satisfaction or thwarting of basic psychological needs, self-determined motivation, autonomous motives and finally well-being outcomes, testing the self-determination theory. The cross-sectional studies do not allow for cause-effect relationship analysis. The testing of relations, effects or predictors is theory-driven. There is a scarcity of longitudinal studies, using both quantitative (preferably, randomised control trials) and qualitative (e.g. qualitative experiments or multiple case studies) research designs, to analyse cause-effects relationships.

**Studies on the antecedents and coaching context /environment**

While there are many studies on the role of autonomy-supportive coach behaviour, less is known on the antecedents for autonomy-supportive coach behaviour and the context in which it can take place (cf. Occhino et al., 2014). The latter is an important issue as the coaching context is not necessarily and traditionally autonomy-supportive (cf. Denison et al., 2017). From a critical perspective, various studies showcased poor coaching and negative effects of coaching on wellbeing. Some of the few studies on antecedents and coaches' characteristics were conducted in relation to autonomy-supportive (versus controlled) coaching behaviour and coaches' narcissism and empathy, harmonious (versus obsessive) passion[4], coaches' well-

[4] "Harmonious passion refers to a strong desire to engage freely in the activity that one loves and results from an autonomous internalization of the activity into the person's identity (...). The activity occupies a significant but not overpowering space in the person's identity and is in harmony with other aspects of the person's life. (...) Obsessive passion results from a controlled internalization of the activity into one's identity. This process originates from intrapersonal and/or interpersonal pressure either because particular contingencies are attached to the activity such as selfesteem, or because the excitement derived from activity engagement becomes uncontrollable. While this phenomenon leads the activity to be part of the person's identity, individuals with a predominant obsessive passion come to develop ego-invested self-structures toward the passionate activity (...). Obsessive passion for an activity forces individuals to engage in the passionate activity in a rigid and narrow-minded manner that is detrimental to positive experiences (e.g., negative affect, rumination). (...) Individuals with an obsessive passion thus experience an uncontrollable urge to engage in their activity; their passion must run its course as people come to be dependent on it. As a result, individuals with a predominant obsessive passion run the

being, need satisfaction and autonomous motivation, as well as affective states, self-awareness and emotional regulation.

**Studies on the coach – athlete relationship / social support**

Two studies focused on the coach-athlete relationship quality (i.e. closeness, commitment and complementarity) in regards to indicators of well- or ill-being such as the athletes' stress appraisal and management, fear of failure, needs satisfaction, vitality and cohesion. Another topic was the style of coach-athlete attachment. The attachment style was investigated in relation to positive and negative affect and need satisfaction. Studies on the coach-athlete relationship also address the interpersonal emotion regulation. In addition, several studies analysed the support from coaches, peer mentors and teammates for athletes' mental health.

**Studies on programmes for the promotion of mental health, mental health literacy and awareness**

Similar to the review of Breslin et al. (2017b) of quantitative studies on interventions targeting the promotion of mental health awareness and well-being, we obtained a considerable heterogeneity of studies and programmes and campaigns. The topics featured within this were mental health knowledge, awareness, stigma, referral to professional treatment, help-seeking intentions and behaviour, mental health literacy and athletes' outcomes. A major concern was the limited evidence in regards to the transfer of coaches' training outcomes to the practical implementation in coaching and changes on athletes' knowledge, behaviour or attitudes.

### 4.1.3. What are the effects on mental well-being and effect mechanism of the different types and aspects of the delivery of sport and physical activity coaching for adults?

**Characteristics of the coaching style / coaching approach / strategies**

The reviewed studies analysed, above all, the effects of autonomy-supportive versus controlled coaching behaviour on the satisfaction versus thwarting of the basic psychological needs of the athletes (i.e. autonomy, competence and relatedness). Autonomy-supportive coaching behaviour is associated with need satisfaction; need satisfaction in turn is associated with various mental well-being outcomes, e.g. positive affect, vitality and motivation, life satisfaction, resilience and self-concept as well as prosocial behaviour towards teammates. On the other hand, controlled coaching behaviour is associated with need thwarting, which leads to ill-being or negative health outcomes such as eating disorders, burnout, depression, negative affect, physical symptoms, and perturbed physiological arousal, and antisocial

risk of experiencing conflict with other life domains and negative consequences during and after engagement in the passionate activity." (Lafrenière et al., 2011, p. 145).

behaviour. Thus, goal setting and a motivational climate seems to moderate or mediate the correlation between coaching behaviour and need satisfaction, and consequently well-being, as does also the coach-athlete relationship. The athletes' perceptions of autonomy-supportive coaching behaviour positively predicted a task-involving climate. The latter relates to adaptive behaviour correlates. The athletes' perceptions of controlling behaviour positively predicted an ego- involving climate. The latter rather relates to maladaptive behaviour correlates (cf. systematic review Harwood et al., 2015). Appleton and Duda (2016) recommend that coach programmes include guidance on how coaches can create more empowering climates, but also how to avoid disempowering climates, as their study showed the vast impact of the disempowering climates. Gillison et al (2019), although not specific to sports coaching, provide an inspiring systematic review and meta-analysis of the techniques used to promote need satisfaction and self-determined motivation within health interventions based on self-determination theory.

**Antecedents and coaching context /environment**

Several antecedents and coaches' characteristics were studied in relation to autonomy-supportive versus controlled coaching behaviour. Autonomy-supportive coaching behaviour was related to coaches' empathy, harmonious passion, as well as positive affective states, self-awareness and emotional regulation. Importantly, the coaches' needs satisfaction and well-being impacts upon his/her coaching behaviour and coach-athlete relationship, which in turn influences athletes' well-being.

Furthermore, it is important to note that coaches' working environment has to be supportive of need satisfaction and motivation, and not need thwarting. The latter is an important issue as the coaching context is not necessarily autonomy-supportive; sport coaching is traditionally rather controlled and taking place in a disciplinary environment (Denison et al., 2017). The coaching environment influences coaches' perceptions and (internalised) assumptions, and thus their coaching behaviour. Fransen et al. (2020), whose study was excluded in this review due to the high percentage (52%) of high-performance cases in the sample, questioned the frequent assumption in sports that "sports coaches often feel that empowering the players in their teams undermines their own leadership status", and thus do not build autonomy supportive environments. However, the results of their study point to the opposite direction, i.e. "that the best coaches are thus the ones who adopt a shared leadership approach and who strengthen the leadership quality of their players" (Fransen et al., 2020). Furthermore, characteristics of the sport or the sport practice in itself may promote positive (e.g. value-based) or negative (e.g. aggressive) environments that favour respective behaviours (e.g. microagressions, hubrisic pride) (e.g. Chinkov & Holt, 2016; Mickelsson, 2020). Thus, the coach must be aware of potential negative behaviours and values inherent to the respective sport practice and build safe coaching environments. While this

review voiced some critical opinions and potential negative aspects of sport practices and coaching, various specific systematic reviews have focused on other negative aspects in sport, e.g. exercise addiction and eating disorders (Di Lodovico et al., 2019; Marques et al., 2019; Trott et al., 2020), aggression and violence in sport (Sønderlund et al., 2014). Recently, concussion in sport and the association with mental health and depression was investigated (Rice et al., 2018; Yrondi et al., 2017).

**Coach – athlete relationship / social support**

Supportive coaching behaviour is associated with the quality of the coach-athlete relationship (closeness, commitment and complementarity), which in turn relates to athletes' well-being (Lafrenière et al., 2008, 2011; Nicholls, Levy, Jones, et al., 2016; Sagar & Jowett, 2015). Multiple studies of Felton & Jowett (2020; 2013a, 2013b, 2015) showed that the relationship between attachment style and well-being was mediated by the athletes' need satisfaction. They advise that coaches should be aware that "athletes' perceptions of what coaches do, and how they relate, are important to their psychological needs satisfaction" (2013b, p. e130). Perceived cohesiveness positively predicted the satisfaction of the basic needs, particularly the relatedness need (Blanchard et al., 2009).

Furthermore, the interpersonal emotion regulation was investigated in the coach-athlete relationship. Coaches' emotions influence athletes' emotions (Braun & Tamminen, 2019; van Kleef et al., 2019). Closeness within a coach-athlete dyad seemed to favour coaches' attempts to regulate their athletes' emotions, and vice versa (Braun & Tamminen, 2019).

Finally, several studies showed the relation of informational and tangible social support from coaches as well as from peer mentors and teammates on the athletes' well-being (Katagami & Tsuchiya, 2017; Koh et al., 2019; Lu et al., 2016; Moen et al., 2019).

**Programmes for the promotion of mental health, mental health literacy and awareness**

The studies showed improvements on coaches' mental health knowledge, awareness and mental health literacy after attending a training programme or module. However, it seems a practical challenge to effectively achieve a transfer of coaches' training outcomes to the athletes. This transfer of knowledge, awareness and attitudes requires more effort and thoughtful strategies, and these should be long-term strategies rather than one-off initiatives. The reviewed mental health literacy or awareness programmes appear deficient in regards to their specificity to the sporting context, clarity on the transfer of benefits to the athletes, and effectiveness on athletes' outcomes such as help-seeking behaviour and referrals to professional support. Programmes for the promotion of mental health, mental

health literacy and awareness should be evidence and theory driven. These programmes may use health behaviour theories (e.g. Self-Determination Theory; Theory of Planned Behaviour; Health Action Process Approach) (Allan et al., 2018; Ntoumanis et al., 2020; Sheeran et al., 2020) and behaviour change techniques (e.g. Behavior Change Technique Taxonomy v1) (Michie et al., 2011, 2013).

### 4.1.4. Recommendations for the training of coaches

The review yielded several recommendations. The studies consent the promotion of autonomy-supportive, empowering environments; e.g. "coaches should use behaviours that support their athletes' autonomy in relation to their personal goals. For example, such behaviours can be demonstrated by providing a sense of choice and adopting their athletes' perspectives, while also avoiding behaviours, such as the use of controlling language, which may exert external, or encourage internal, pressures" (Smith et al., 2010, p. 31).

However, Denison et al. (2017) questions how to achieve the desired outcomes of autonomy-supportive and empowering coaching behaviour in a traditional controlled and disciplinary framework that normalises maximum coach control in sports. The authors argue that this change in coaching behaviour needs to be accompanied by changes to the power relations and by a critique of the sports' disciplinary legacy. Thus, *coaching differently* (how the authors calls the empowering, autonomy-supportive coaching behaviour) means "to continually problematize what they do - the details of the practices they consistently follow, the types of relationships they form - and what they say - the metaphors, analogies and examples they use, the instructions they give, the questions they ask, the points they emphasize and of course the questions and points they do not ask or emphasize" (Denison et al., 2017, p. 780). Another critical theme is body image and appreciation, as the body is particularly present and exposed in sports. Soulliard et al. (2019) advise "to encourage a culture that focuses less on body appearance and more on cultivating positive body image" and "to deliver messages of appreciation for their athletes' bodies with a particular focus on how their bodies allow them to perform successfully in their sport". Huberty et al. (2008) recommend "improving or deemphasizing body image" in order to improve self-worth.

The coaching environment also has implications on the well-being of the coach, and thus on their behaviour and consequently on the athletes' well-being. Opportunities for professional development, job security and work-life balance are important to facilitate coaches' need satisfaction and well-being (Stebbings et al., 2012). Coaches' working environment could be examined to be supportive to the eudaimonic well-being of the coach as well by, for example, promoting integration of the coaching role with own values (integration) and supporting autonomous motivation

(Stebbings et al., 2015). "When coaches experience a sense of congruence between their coaching role and their personal values, this may empower them with more energy to invest personal time and effort into that role. This implies that performance directors, head coaches and other employers of coaches should allow coaches the freedom to express their ideas and work in accordance with their values and beliefs. This can be achieved by providing choice and avoiding strict regulation of management and leadership strategies" (Stebbings et al., 2015, p. 47). Furthermore, educational programmes of coaches should include emotional regulation, self-awareness and mindfulness training to improve coaches' regulation of affective states in coaching athletes.

Lentz et al. (2018) alerted in their review that a "deficient coach-student athlete relationship may lead to mental health symptoms and build over time to an illness in these individuals even after their high school or college athletic career is over". They furthermore located the need to promote mental health awareness and knowledge of the coaches considering how the coach establishes and builds relationships with their athletes.

Koh et al. (2019) provide important insights for coaches on how to incorporate social support strategies into coaching, thus to better support athletes' well-being (see Table 5).

**Table 5: Key strategies employed by university coaches (Koh et al., 2019)**

| **Emotional support:** |
|---|
| • Giving security and reassurance<br>• Giving individualised attention<br>• Showing genuine concern in athletes' well-being<br>• Getting to know athletes on a personal level<br>• Helping athletes feel comfortable and secure by getting them to play to their strengths<br>• Maintaining continuous support by being there for athletes |
| **Esteem support:** |
| • Teaching athletes techniques to deal with pressure<br>• Building a positive team culture by knowing athletes' interests and well-being<br>• Managing athletes' expectation of personal performance<br>• Providing positive reinforcements to athletes<br>• Building athletes' confidence through self-discovery of techniques<br>• Setting time for festive team meals |

| |
|---|
| • Using coach's personal life experience to motivate athletes and strive for better performance |
| **Informational support:** |
| • Keeping coaching pointers specific to provide constructive feedback<br>• Sufficiently prepping athletes in competitive situations<br>• Providing contextual feedback<br>• Tailoring advice to athletes when they are performing poorly<br>• Conveying what is expected of athletes and setting boundaries<br>• Helping athletes reflect on their performance<br>• Understanding athletes' goals<br>• Guiding athletes by encouraging them to explore different playing strategies and techniques |
| **Tangible support:** |
| • Providing practical help to reduce athletes' worries and stress<br>• Helping athletes explore new opportunities<br>• Using coach's connections to develop athletes<br>• Provision of equipment or purchase of sports needs at affordable prices |

Recently, Bissett et al. (2020) published a narrative review on the role of coaches in promoting athletes' mental health and help-seeking behaviours, framed within the World Health Organization's prevention framework (i.e., primary population-wide health promotion intervention; secondary intervention to reduce prevalence and targeting at risk population groups; tertiary intervention to reduce the burden of disability and prevent relapse; Bissett et al. 2020, p.2). Based on this review, they generated a preliminary list of potential coach behaviours to promote athlete mental health. In addition, the authors conducted a Delphi-study on this preliminary list with 15 participants (including coaches, athletes, mental health professionals and health educators). The findings on the coach target behaviour are presented in Table 6 below (Bissett et al. 2020, p.5):

**Table 6: List of coach behaviours with expert consensus on utility, appropriateness and feasibility in supporting athlete mental health (Bissett et al. 2020, p.5).**

| Primary prevention: |
| --- |
| 1.1 Coaches should verbally communicate to athletes their role in supporting athlete mental health, consistent with their sport organisation's mental health protocol. |
| 1.2 Coaches should verbally communicate their intention to encourage athletes to consult with a licensed practitioner with mental health service competencies when behaviours that represent mental health concerns are observed. |
| 1.3 Coaches should verbally communicate with athletes that they believe it is important to seek help (such as, but not limited to, medical, psychological and social support) for mental health concerns. |
| 1.4 Coaches should verbally communicate with athletes that they believe it is important to support peers in seeking help for mental health concerns. |
| 1.5 Coaches should enlist the support of relevant stakeholders (including, but not limited to, parents, administrators and support staff) to endorse the importance of athletes seeking help for mental health concerns. |
| 1.6 Coaches should communicate that sport-specific decision-making (e.g. roster selections, playing time and so on) will not be dictated by an athlete's mental health concerns and/or care-seeking behaviour unless the decision is endorsed by a licensed practitioner with mental health service competencies. |
| 1.7 Coaches should share with athletes that addressing mental health concerns may improve athletic performance. |
| 1.8 Coaches should establish bidirectional coach–athlete relationships that emphasise honesty and openness. |
| 1.9 Coaches should engage in healthy self-care practices. |

| |
|---|
| 1.10 Coaches should not use language that stigmatises mental illness and mental health help-seeking. |
| 1.11 Coaches should positively reinforce athlete behaviours that are consistent with a team culture supportive of mental health and mental health help-seeking. |
| 1.12 Coaches should communicate to athletes that they are receptive to feedback in how to improve the team's culture surrounding athlete mental health. |
| 1.13 Coaches should communicate to athletes that they are receptive to feedback in how to improve their own abilities in supporting athlete mental health. |
| **Secondary prevention** |
| 2.1 Coaches should attend to changes in athlete behaviour that may indicate the emergence of a mental health concern. |
| 2.2 If coaches are concerned that an athlete is experiencing a non-emergency mental health concern, they should ask how the athlete is feeling and listen to the athlete's concern to initiate next steps consistent with their sport organisation's mental health protocol. |
| 2.3 Coaches should verbally communicate boundaries that govern what they can and cannot do when an athlete discloses mental health concerns or relevant behaviours are observed. |
| 2.4 Coaches should provide information to athletes experiencing a potential mental health concern about local resources for accessing licensed practitioners with mental health service competencies. |
| 2.5 In non-emergency situations, coaches should provide the athlete (or the athlete's parent/guardian if the athlete is a minor) with information about where care can be sought from a licensed practitioner with mental health service competencies. |
| 2.6 If coaches think an athlete may be an immediate threat to the safety of others, coaches should contact emergency services. |

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|---|
| 2.7 If coaches think an athlete may be a threat to themselves, coaches should follow their sport organisation's emergency mental health protocol, unless there is no protocol in which case coaches should remain with the athlete until emergency services or a licensed practitioner with mental health service competencies has initiated next steps for care. |
| **Tertiary prevention** |
| 3.1 Coaches should provide positive reinforcement to athletes who are actively engaged in seeking mental healthcare. |
| 3.2 Coaches should provide consistent ongoing support to all athletes regardless of an athlete's relative athletic ability and skill level. |
| 3.3 Coaches should protect the confidentiality of athletes' mental health help-seeking, consistent with athletes' preferences. |
| 3.4 Coaches should respect athletes' desired levels of coach involvement in discussing and supporting the medical and/or psychological management of mental health concerns. |
| 3.5 Coaches should express to athletes a willingness to modify sport-related responsibilities to accommodate treatment and recovery. |
| 3.6 Coaches should continue to offer athletes opportunities for engagement in team activities if athletes are taking a break from competition due to mental health concerns. |

## 4.2. Limitations

The scope of the review was quite broad and the search strategies relatively complex. This approach resulted in a good overview of prevailing topics and studies in the field of coaching relating to mental well-being, which is useful for designing a coach education programme. However, this approach also comes with its limitations. First, the inclusion of only three databases may have resulted in the absence of other relevant studies (for example, Bissett et al., 2020 is not indexed in the databases used) that are indexed only in other databases. Reviewing other relevant databases such as PubMed, Scopus, Web of Science, ERIC, EMBASE, CINAHL

or LILACS would be beneficial if resources permitted. Second, a narrower and more focused search strategy may have also contributed to identify further studies, for example, on coaching related to self-determination theory. However, a narrower search strategy would have probably not yielded the broad scope required for the goal defined in this review. Third, the focus on adults resulted in the exclusion of some studies that – although targeting a different age – may have informed to some extent training programmes for coaches of adults as well. Similarly, the search strategy excluded studies on high performance and coaching of elite athletes that may have provided to some extent aspects that are independent of the coaching context; however, we screened a wide range of studies that included all kinds of performance levels and even (semi-) professional players. As discussed in the introduction, participation coaching and recreational grassroots sports do include competition and performance orientation and the degree may differ among sports, clubs and players levels. Furthermore, performance coaching and participation coaching are also two overlapping concepts (see introduction).

No meta-analysis was conducted as the measurements and study designs differed too much. Furthermore, the quality of studies was quite heterogeneous. The lack of longitudinal studies does not allow building evidence on the cause – effects relationships. However, many of the reviewed studies do use theory.

# 5. CONCLUSIONS

The review presented a wide range of studies related to coaching and well-being. It highlights the importance to consider coaching behaviour and the coach-athlete relationship from a mental health and well-being perspective. This includes the creation of an autonomy supportive environment, satisfaction of the basic psychological needs (i.e. autonomy, competence and relatedness) as well as coach-athlete relationship quality and social support. The review also calls for a critical perspective, in the sense that the coaching context and working environment may not be empowering and supportive to well-being, and that coaches, who want to provide autonomy-supportive environments, may face various obstacles, e.g. in relation to expectations from athletes and other coaches, customs of traditional coaching practices.

Programmes for the mental health promotion in grassroots sport should be implemented at various levels, including:

- supporting coaches, peer leaders and athletes in the promotion of mental health literacy and well-being among athletes (e.g. through providing knowledge, reducing stigma, improving attitudes and help-seeking behaviour, establishing social support)
- supporting coaches in reflecting on and improving coaching behaviour and coach-athlete relationships with regards to well-being and mental health (e.g. how to build autonomy-supportive environments, favour athletes' needs satisfaction and self-determined motivation, and avoid thwarting of athletes' needs; stimulate critical thinking and awareness of stressors and resources for well-being)
- improving coaches' occupational environment and coaching context (e.g. building supportive working environments, favouring coaches' needs satisfaction and self-determined motivation, hedonic and eudaimonic well-being, and avoiding thwarting of coaches' needs; stimulating critical thinking and awareness of stressors and resources for coaches' well-being).

Further research should investigate the effects and effect mechanism/processes of such programmes through conducting longitudinal studies, using quantitative and qualitative methods, and experimental study designs.

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Zurita Ortega, F., Fernández Garcia, R., Cachón Zagalaz, J., Ambris Sandoval, J., Zaleta Morales, L., & Hernandez Gallardo, D. (2014). Satisfacción y autoestima en jugadores de fútbol base en relación con los estilos de enseñanza que reciben de los entrenadores de Ciudad del Carmen (México). / Satisfaction and self-esteem in youth football players regarding teaching styles they receive of coaches from Ciudad del Carmen (Mexico). *Journal of Sport & Health Research*, *6*(1), 63–73. SPORTDiscus.

# APPENDICES

## APPENDIX 1: Complete search in the four databases used

### A. COCHRANE LIBRARY

A1. Keywords combination:

(Sport* OR physical activit* OR exercise* OR danc* OR physical culture OR fitness) AND
(mental* wellbeing OR mental* well-being OR emotion* wellbeing OR emotion* well-being OR Psychosocial* wellbeing OR Psychosocial* well-being OR Psycho-social wellbeing OR Psycho-social well-being OR Psychological wellbeing OR Psychological well-being OR cognitive wellbeing OR cognitive well-being OR self-perception OR empath* OR affect* balance OR happiness OR life satisfaction OR coping OR optimism* OR hopefulness OR self-esteem* OR self-worth OR sense of coherence OR resilience OR hardiness OR self-efficacy OR sense of mastery OR sense of personal control OR empowerment OR quality of life OR emotional skill* OR emotional intelligence* OR safeguard* OR connect* OR mental* health OR mental* burden*)

A2. Limits: From 2005 to 2020

### B. SPORTDISCUS

**B1. Keywords combination:**

- Search **S1**: In Abstract:

  sport* OR "physical activit*" OR exercise* OR danc* OR "physical culture" OR fitness OR player* OR *athlet* OR running OR runner* OR jumper* OR archer* OR badminton OR baseball OR softball OR basketball OR boxing OR boxer* OR canoe* OR cycling OR cyclist* OR diving OR diver* OR equestrian OR rider* OR fencing OR fencer* OR football OR soccer OR golf* OR gymnast* OR handball OR *hockey OR judo* OR karate* OR biathlon OR triathlon OR pentathlon OR rowing OR rower* OR rugby OR sailing OR sailor* OR shooting OR shooter* OR skateboard* OR skater* OR climbing OR climber* OR surfing OR surfer* OR swimm* OR *tennis OR taekwondo OR trampolin* OR *volleyball OR "water polo" OR weightlift* OR wrestl* OR skiing OR skier* OR snowboard* OR

bobsleigh OR *skating OR curling OR luge OR “basque pelota” OR “martial art*” OR yoga

AND

“mental* wellbeing” OR “mental* well-being” OR “emotion* wellbeing” OR “emotion* well-being” OR “Psychosocial* wellbeing” OR “Psychosocial* well-being” OR “Psycho-social wellbeing” OR “Psycho-social well-being” OR “Psychological wellbeing” OR “Psychological well-being” OR “cognitive wellbeing” OR “cognitive well-being” OR “spiritual wellbeing” OR “spiritual well-being” OR “self-perception” OR empath* OR “affect* valence” OR “affect* balance” OR happiness OR “life satisfaction” OR coping OR optimism* OR hopefulness OR assertiveness OR “stress management” OR “work life balance” OR “self-esteem*” OR self confidence OR “self-worth” OR “sense of coherence” OR resilience OR hardiness OR “self-efficacy” OR “sense of mastery” OR “sense of personal control” OR empowerment OR “quality of life” OR “emotional skill*” OR “emotional intelligence*” OR “emotional adjustment” OR “emotional control” OR “positive emotion*” OR “internal external locus of control” OR “self control” OR “interpersonal control” OR safeguard* OR connectedness OR connective OR “mental* health”

AND

coach* OR training OR trainer* OR facilitat* OR mentor* OR intervention* OR program* OR club*

NOT

rehabilitat* OR therap* OR treatment* OR patient* OR “medical care”

NOT

“elite athlet*” OR “elite player*” OR “high performance” OR “elite sport*”

NOT

child* OR minors

- Search **S2**: In Title (the same combination as the previous one)

- Search **S3**: S1 or S2

**B2. Limits:**

- 2005-2020;
- Only peer reviewed;
- Only academic journals (not magazines)
- Languages: English, German, French, Italian and Spanish
- "Apply related words" + "Apply equivalent subjects" activated

## C. PSYCHINFO

| |
|---|
| **1. exp sports/** |
| **2. physical activity/ or exercise/ or physical fitness/** |
| **3. sport$.ab,ti.** |
| **4. physical activit$.ab,ti.** |
| **5. physical activity/** |
| **6. Dance/** |
| **7. physical culture.ab,ti.** |
| **8. danc$.ab,ti.** |
| **9. athletes/** |
| **10. athlet$.ab,ti.** |
| **11. running/** |
| **12. runner$.ab,ti.** |
| **13. sports/ or baseball/ or basketball/ or extreme sports/ or football/ or judo/ or martial arts/ or soccer/ or swimming/ or tennis/ or weightlifting/** |
| **14. "archer*".ab,ti.** |
| **15. badminton.ab,ti.** |
| **16. baseball.ab,ti.** |
| **17. softball.ab,ti.** |
| **18. basketball.ab,ti.** |
| **19. boxing.ab,ti.** |
| **20. "boxer*".ab,ti.** |
| **21. "canoe*".ab,ti.** |

| |
|---|
| **22. (cycling or cyclist*).ab,ti.** |
| **23. equestrian.ab,ti.** |
| **24. "rider*".ab,ti.** |
| **25. (fencing or fencer*).ab,ti.** |
| **26. diving.ab,ti.** |
| **27. "golf*".ab,ti.** |
| **28. "gymnast*".ab,ti.** |
| **29. handball.ab,ti.** |
| **30. "*hockey".ab,ti.** |
| **31. "karate*".ab,ti.** |
| **32. triathlon.ab,ti.** |
| **33. rowing.ab,ti.** |
| **34. biathlon.ab,ti.** |
| **35. pentathlon.ab,ti.** |
| **36. "rower*".ab,ti.** |
| **37. rugby.ab,ti.** |
| **38. (sailing or sailor*).ab,ti.** |
| **39. shooting.ab,ti.** |
| **40. "shooter*".ab,ti.** |
| **41. (skateboard* or skater*).ab,ti.** |
| **42. (climbing or climber*).ab,ti.** |
| **43. (surfing or surfer*).ab,ti.** |
| **44. tennis.ab,ti.** |
| **45. table tennis.ab,ti.** |
| **46. taekwondo.ab,ti.** |
| **47. diver$1.ab,ti.** |
| **48. "trampolin*".ab,ti.** |
| **49. volleyball.ab,ti.** |
| **50. water polo.ab,ti.** |
| **51. "weightlift*".ab,ti.** |

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|---|
| **52. "wrestl*".ab,ti.** |
| **53. (skiing or skier$).ab,ti.** |
| **54. "snowboard*".ab,ti.** |
| **55. bobsleigh.ab,ti.** |
| **56. "*skating".ab,ti.** |
| **57. curling.ab,ti.** |
| **58. luge.ab,ti.** |
| **59. basque pelota.ab,ti.** |
| **60. "martial art*".ab,ti.** |
| **61. yoga.ab,ti.** |
| **62. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61** |
| **63. mental health/** |
| **64. exp Well Being/ or exp "Resilience (Psychological)"/ or exp Life Satisfaction/ or exp Coping Behavior/** |
| **65. well being/ or life changes/ or life satisfaction/ or lifestyle changes/ or mental health/ or positive psychology/ or "quality of life"/ or work-life balance/** |
| **66. self-perception/ or self-efficacy/ or self-confidence/ or self-esteem/** |
| **67. empathy/** |
| **68. affective valence/** |
| **69. happiness/** |
| **70. life satisfaction/ or work-life balance/** |
| **71. coping behavior/ or emotional adjustment/ or emotional control/ or "sense of coherence"/ or spiritual well being/** |
| **72. optimism/ or positive emotions/** |
| **73. hope/** |
| **74. assertiveness/ or empowerment/** |
| **75. stress management/** |
| **76. "Internal External Locus of Control"/ or Self-Control/ or exp Interpersonal Control/** |
| **77. "quality of life"/** |

| |
|---|
| **78. Emotional Control/ or Emotional Intelligence/** |
| **79. hardiness.ab,ti.** |
| **80. self worth.ab,ti.** |
| **81. connectedness.ab,ti.** |
| **82. 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81** |
| **83. coaches/ or coaching/ or athletic training/ or sports coaching/** |
| **84. exp athletic training/** |
| **85. mentor/** |
| **86. Social Facilitation/** |
| **87. intervention/** |
| **88. "clubs (social organizations)"/** |
| **89. organizations/** |
| **90. program$.ab,ti.** |
| **91. trainer.ab,ti.** |
| **92. 83 or 84 or 85 or 86 or 87 or 88 or 89 or 90 or 91** |
| **93. 62 and 82 and 92** |
| **94. limit 93 to (peer reviewed journal and human and adulthood <18+ years> and "300 adulthood " and "0110 peer-reviewed journal" and yr="2005 - 2021")** |
| **95. limit 94 to (peer reviewed journal and human and adulthood <18+ years> and "300 adulthood " and "0110 peer-reviewed journal" and (catalan or english or french or german or italian or portuguese or spanish) and human and yr="2005 -Current" and last 16 years)** |
| **96. (coaches/ or coaching/ or athletic training/ or sports coaching/ or exp athletic training/ or mentor/ or Social Facilitation/ or "clubs (social organizations)"/ or trainer$.ab,ti. or coach$.ab,ti.) not elite athlet$.ab,ti. not elite player$.ab,ti. not elite sport$.ab,ti. not high performance.ab,ti.** |
| **97. (mental health/ or exp Well Being/ or exp "Resilience (Psychological)"/ or exp Life Satisfaction/ or exp Coping Behavior/ or well being/ or life changes/ or life satisfaction/ or lifestyle changes/ or mental health/ or positive psychology/ or "quality of life"/ or work-life balance/ or self-perception/ or self-confidence/ or self-esteem/ or empathy/ or affective valence/ or happiness/ or life satisfaction/ or work-life balance/ or coping behavior/ or emotional adjustment/ or emotional control/ or "sense of coherence"/ or spiritual well being/ or optimism/ or positive emotions/ or hope/ or assertiveness/ or empowerment/ or stress management/ or "Internal External Locus of Control"/ or Self-Control/ or Interpersonal Control/ or Emotional Control/ or Emotional Intelligence/ or** |

| |
|---|
| **hardiness.ab,ti. or self worth.ab,ti. or connectedness.ab,ti.) not rehabilitation/ not treatment/ not patient$.ab,ti. not "medical care".ab,ti.** |
| 98. 62 and 96 and 97 |
| **99. limit 98 to (peer reviewed journal and human and adulthood <18+ years> and "300 adulthood " and "0110 peer-reviewed journal" and (catalan or english or french or german or italian or portuguese or spanish) and human and yr="2005 -Current" and last 16 years)** |

## D. PSYCHARTICLES

(((sport$ or physical activit$ or exercise$ or danc$ or physical culture or fitness or player$1 or $athlet$ or running or runner$1 or jumper$1 or archer$1 or badminton or baseball or softball or basketball or boxing or boxer$1 or canoe$ or cycling or cyclist$1 or diving or diver$1 equestrian or rider$1 or fencing or fencer$1 or football or soccer or golf$ or gymnast$ or handball or $hockey or judo$ or karate$ or biathlon or triathlon or pentathlon or rowing or rower$1 or rugby or sailing or sailor$1 or shooting or shooter$1 or skateboard$ or skater$1 or climbing or climber$1 or surfing or surfer$1 or swimm$ or $tennis or taekwondo or trampolin$1 or $volleyball or water polo or weightlift$ or wrestl$ or skier$ or skiing or snowboard$ or bobsleigh or $skating or curling or luge or basque pelota or martial art$1 or yoga) and (mental$ wellbeing or emotion$ wellbeing or Psychosocial$ wellbeing or Psychological wellbeing or cognitive wellbeing or spiritual wellbeing or self perception or empath$ or affect$ valence or affect$ balance or happiness or life satisfaction or coping or optimism$ or hopefulness or assertiveness or stress management or work life balance or self esteem$ or self confidence or self worth or sense of coherence or resilience or hardiness or sense of mastery or sense of personal control or empowerment or quality of life or emotional skill$1 or emotional intelligence$1 or emotional adjustment or emotional control or positive emotion$1 or internal external locus of control or self control or interpersonal control or safeguard$ or connectedness or connective or mental$ health) and (coach$ or training or trainer$1 or facilitat$ or mentor$ or club$1)) not (rehabilitat$ or therap$ or treatment$ or patient$ or medical care or elite athlete$ or elite player$ or high performance or elite sport$)).ti,ab.

# APPENDIX 2: Excluded articles and reasons for exclusion

### Table 7: Excluded articles (n=220) and reasons for exclusion

| | REFERENCE | EXCLUSION CRITERIA |
|---|---|---|
| 1. | (Afanasieiva et al., 2019) | Out of scope: Performance oriented |
| 2. | (Ajilchi et al., 2019) | Cluster: Awareness (intervention) + Mediators |
| 3. | (Álvarez et al., 2018) | Out of scope: focus on mental toughness |
| 4. | (Anshel et al., 2010) | Cluster: Awareness (intervention) |
| 5. | (Anshel & Sutarso, 2007) | Cluster: ST (Stressors…) |
| 6. | (Anshel et al., 2009) | Cluster: ST (Stressors…) |
| 7. | (Arnold et al., 2016) | Cluster: ST (Stressors…) |
| 8. | (Arthur-Cameselle & Quatromoni, 2011) | Cluster: ST (Stressors…) |
| 9. | (Astorino et al., 2020) | Cluster: Awareness (intervention) + Mediators (affect) |
| 10. | (Bacevičienė et al., 2020) | Cluster: ST (Stressors…) |
| 11. | (Bailey et al., 2019) | Out of scope |
| 12. | (Bardel et al., 2012) | Cluster: ST (Stressors…) |
| 13. | (Barnes et al., 2010) | Cluster: Mediators (affect) |
| 14. | (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2011) | Paper type: Conference report; non-systematic review |
| 15. | (Bartholomew, Ntoumanis, Ryan, et al., 2011): only study 2 was excluded | Study 2: Age: Range = 12-17<br>(Study 1: included) |
| 16. | (Basiaga-Pasternak et al., 2020) | Cluster: ST (Stressors…) |
| 17. | (Bawa, 2010) | Cluster: ST (Stressors…) |
| 18. | (Bekiari et al., 2006) | Cluster: ST (Stressors…) |
| 19. | (BenZion, 2012) | Paper type |
| 20. | (Blom et al., 2011) | Age: Range = 14-18 |

| | | |
|---|---|---|
| **21.** | (Bopp et al., 2015) | Cluster: MHC (mental health of coaches) |
| **22.** | (Brehm et al., 2005) | Cluster: Awareness (intervention) |
| **23.** | (Broch & Kristiansen, 2014) | Cluster: ST (Stressors…) |
| **24.** | (Buckle & Walsh, 2013) | Age: Range = 12-17 |
| **25.** | (Bum & Jeon, 2016) | Cluster: SC (Social Capital and Support…) and EI (Emotional Intelligence) |
| **26.** | (Burnett, 2014) | Cluster: Awareness (intervention) |
| **27.** | (Butler-Coyne et al., 2019) | Cluster: MHA (mental health of athletes) |
| **28.** | (Calogiuri et al., 2015) | Cluster: OS (Organizational Support…) |
| **29.** | (Campo et al., 2016) | Level: high performance |
| **30.** | (Campo et al., 2019) | Cluster: SC (Social Capital and Support…) and EI (Emotional Intelligence) |
| **31.** | (Cano et al., 2018) | Age: Range = 12-37; Mage < 17.50 |
| **32.** | (Carpentier & Mageau, 2013) | Age: Range = 11-35; Mage < 17.50 |
| **33.** | (Carpentier & Mageau, 2016) | Age: Range = 10-24; Mage < 17.50 |
| **34.** | (Carraro et al., 2018) | Cluster: Mediators (affect) |
| **35.** | (Castillo et al., 2015) | Age: Adolescents' coaches |
| **36.** | (Chen et al., 2020) | Cluster: ST (Stressors…) |
| **37.** | (Cheng et al., 2016) | Out of scope: motivation, not mental health |
| **38.** | (Cherepov et al., 2018) | Cluster: Mediators (affect) |
| **39.** | (Cho et al., 2020) | Cluster: SC (Social Capital and Support…) and EI (Emotional Intelligence) |
| **40.** | (Chung et al., 2016) | Out of scope |
| **41.** | (Ciaccioni et al., 2019) | Out of scope: No coaching + no mental health |
| **42.** | (Clement & Arvinen-Barrow, 2019) | Out of scope: clinical (patient-athletes) |

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|---|---|---|
| **43.** | (Clement & Gilson, 2012) | Cluster: ST (stressors…) & SC (Social Capital and Support…) |
| **44.** | (Clement & Shannon, 2011) | Cluster: SC (Social Capital and Support…) |
| **45.** | (Cowan & Taylor, 2015) | Out of scope: project self-efficacy towards future employment in coaching) |
| **46.** | (Crisp, 2020) | Cluster: Awareness (intervention) |
| **47.** | (Cunningham, 2009) | Out of scope: no mental health outcome; only about coach |
| **48.** | (Cunningham & Sagas, 2007) | No full text available: only abstract |
| **49.** | (Czech et al., 2006) | Age: High school athletes |
| **50.** | (David & Larson, 2018) | Out of scope: clinical treatment / patients |
| **51.** | (Davies, 2010) | Age: School environment |
| **52.** | (Dawson & Hammer, 2020) | Cluster: ST (Stressors…) |
| **53.** | (Day et al., 2013) | Cluster: ST (Stressors…) and MHC (Mental health of coaches) |
| **54.** | (de Beaudrap et al., 2017) | Cluster: MHA (Mental health of athletes) |
| **55.** | (A. P. (Karin) de Bruin et al., 2009) | Cluster: ST (Stressors…)<br>Out of scope: clinical<br>Mage = aprox. 15 |
| **56.** | (E. I. de Bruin et al., 2017) | Out of scope: clinical |
| **57.** | (Decamps et al., 2012) | Cluster: Awareness (intervention) |
| **58.** | (Demaine & Short, 2007) | No full text available: conference abstract |
| **59.** | (Devonport & Lane, 2014) | Cluster: ST (Stressors…) and EI (Emotional Intelligence) |
| **60.** | (Dionigi, 2007) | Cluster: Mediators (self-efficacy) |
| **61.** | (Dionigi & Cannon, 2009) | Cluster: Mediators (self-efficacy) |
| **62.** | (Dixon et al., 2019) | Cluster: Awareness (intervention) |
| **63.** | (Donohue et al., 2018) | Out of scope: Clinical |
| **64.** | (Donohue et al., 2007) | Aim out of scope Aim: develop of an instrument |

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|---|---|---|
| 65. | (Donohue et al., 2019) | Cluster: MHA (Mental health of athletes) |
| 66. | (Dugan et al., 2015) | Out of scope: leadership development |
| 67. | (Dziembowska et al., 2016) | Out of scope: stress management |
| 68. | (D. J. Edwards & Edwards, 2012) | Out of scope: proof for effectiveness of sport psychology training |
| 69. | (D. J. Edwards & Steyn, 2008) | Age: school environment (16-18 years) |
| 70. | (S. D. Edwards & Edwards, 2011) | Cluster: MHA (Mental health of athletes) |
| 71. | (S. D. Edwards et al., 2005) | Cluster: Awareness (intervention) |
| 72. | (Eime, Harvey, Payne, et al., 2010) | No full text available: conference abstract |
| 73. | (Eime, Harvey, Brown, et al., 2010) | Cluster: Awareness (intervention) |
| 74. | (Eime et al., 2014) | Cluster: Awareness (intervention) |
| 75. | (Erickson et al., 2015) | Cluster: ST (Stressors), SC (Social capital and support) and MHA (Mental health of athletes) |
| 76. | (Eys et al., 2005) | Out of scope: No well-being |
| 77. | (Fader et al., 2019) | Cluster: SC (Social capital and support), OS (Organizational support) and MHA (Mental health of athletes) |
| 78. | (Fenton et al., 2017) | Out of scope (individuals with mental illness)<br>Integrative review (In text: how recreation activities can contribute to recovery for individuals with mental illness) |
| 79. | (Ferdowsi et al., 2010) | Out of scope: No coaching; no sport club setting |
| 80. | (Fernández-Balboa & González-Calvo, 2018) | Out of scope: only body image |
| 81. | (Fransen et al., 2020) | Level: 51,8% of the participants compete at high competitive level |
| 82. | (Fransen et al., 2012) | Cluster: Mediators (self) |
| 83. | (Freeman & Rees, 2010) | Cluster: SC (Social capital and support) |

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|---|---|---|
| **84.** | (Fried et al., 2018) | Cluster: MHA |
| **85.** | (Gallardo Peña et al., 2019) | Cluster: ST (Stressors), OS (Organizational support) and EI (Emotional Intelligence) |
| **86.** | (García-Jarillo et al., 2016) | Cluster: ST (Stressors) |
| **87.** | (Garratt et al., 2013) | Age: children |
| **88.** | (Gdonteli & Gavriilidis, 2014) | Out of scope: motivation |
| **89.** | (Gerdtham et al., 2020) | Cluster: MHA (Mental health of athletes) |
| **90.** | (Gilbert et al., 2015) | Out of scope: clinical / patients |
| **91.** | (Giovannetti et al., 2019) | Cluster: ST (Stressors) and MHA (Mental health of athletes) |
| **92.** | (González Hernández, 2011) | Age: Adolescents - no age specified |
| **93.** | (González et al., 2016) | Age: Range = 11-13 |
| **94.** | (Gourlay & Barnum, 2010) | Paper type: practical recommendations (considered in the report) |
| **95.** | (Greene & Petruzzello, 2015) | Cluster: Mediators (affect) |
| **96.** | (Grobbelaar et al., 2018) | Out of scope: performance/elite oriented |
| **97.** | (Gross et al., 2018) | Cluster: Mediators (coping/mindfulness) + awareness (intervention) |
| **98.** | (Guzmán et al., 2013) | Cluster: MHC (Mental health of coaches) |
| **99.** | (Hancock et al., 2019) | Cluster: ST (Stressors) and MHC (Mental health of coaches) |
| **100.** | (Hanton et al., 2013) | Out of scope: Pre-competitive anxiety |
| **101.** | (Hargreaves & Pringle, 2019) | Out of scope: clinical / patients |
| **102.** | (Horn, 2019) | Age: children and young athlete |
| **103.** | (Hrusova, 2015) | Out of scope: no coaching |
| **104.** | (Hurley et al., 2020) | Age: parents of adolescents |
| **105.** | (Hwang et al., 2013) | Age: coaches at high school level |

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|---|---|---|
| **106.** | (Ingstrup et al., 2017) | Cluster: MHC (Mental health of coaches) |
| **107.** | (Jacobs & Wright, 2018) | Cluster: Awareness (intervention) |
| **108.** | (Jakobsson et al., 2014) | Cluster: SC (Social capital and support) and OS (Organizational support) |
| **109.** | (Jeckell et al., 2018) | Cluster: ST (Stressors), OS (Organizational support) and MHA (Mental health of athletes) |
| **110.** | (Johnson et al., 2020) | Cluster: ST (Stressors), OS (Organizational support) and MHA (Mental health of athletes) |
| **111.** | (Jowett et al., 2012) | Out of scope: No well-being |
| **112.** | (Jowett et al., 2017) | Level: Elite athletes |
| **113.** | (Jowett & Frost, 2007) | Level: Elite athletes |
| **114.** | (Kerr et al., 2006) | Cluster: ST (Stressors) |
| **115.** | (Kilo & Hassmén, 2016) | Cluster: ST (Stressors), OS (Organizational support) and MHC (Mental health of coaches) |
| **116.** | (Y. kuk Kim et al., 2012) | Out of scope: taekwondo character and life-skills. No coaching |
| **117.** | (Kosmidou et al., 2015) | Cluster: ST (Stressors) |
| **118.** | (Kroshus, 2017) | No full text available |
| **119.** | (Kuo, 2013) | Cluster: Awareness (intervention) |
| **120.** | (Laborde et al., 2016) | Cluster: EI (Emotional Intelligence) |
| **121.** | (Lane et al., 2012) | Cluster: EI (Emotional Intelligence) |
| **122.** | (Lawson, 2005) | Cluster: OS (Organizational support) |
| **123.** | (Lee & Chelladurai, 2018) | Cluster: ST (Stressors), EI (Emotional Intelligence) and MHC (Mental health of coaches) |
| **124.** | (Lee et al., 2015) | Cluster: ST (Stressors) |
| **125.** | (Leenstra et al., 2019) | Out of scope: clinical |
| **126.** | (Legrand, 2014) | Out of scope: clinical |

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|---|---|---|
| 127. | (Lentz et al., 2018) | No full text available |
| 128. | (Lewis et al., 2017) | Cluster: Awareness (intervention) |
| 129. | (Lindgren et al., 2017) | Cluster: SC (Social capital and support), OS (Organizational support) |
| 130. | (Litchfield, 2011) | Cluster: SC (Social capital and support), OS (Organizational support) |
| 131. | (Litchfield, 2013) | Cluster: SC (Social capital and support), OS (Organizational support) |
| 132. | (Lloyd & Little, 2010) | Out of scope: No coach or equivalent |
| 133. | (Loadman, 2019) | Cluster: OS (Organizational support) |
| 134. | (Lorimer, 2013) | Out of scope: No well-being |
| 135. | (Lorimer, 2020) | Out of scope: No well-being |
| 136. | (Lorimer & Jowett, 2009a) | Out of scope: No well-being |
| 137. | (Lorimer & Jowett, 2009b) | Out of scope: No well-being |
| 138. | (Lorimer & Jowett, 2010a) | Out of scope: No well-being |
| 139. | (Lorimer & Jowett, 2010b) | Out of scope: No well-being |
| 140. | (Lorimer & Jowett, 2011) | Out of scope: No well-being |
| 141. | (Lyoka, 2011) | Out of scope: No coaching |
| 142. | (MacFarlane et al., 2016) | Cluster: ST (Stressors…) |
| 143. | (Machado, 2017) | No full text available |
| 144. | (Madigan et al., 2018) | Cluster: ST (Stressors) |
| 145. | (Magee, 2011) | Cluster: Awareness (intervention) |
| 146. | (Magee et al., 2015) | Out of scope: Patients |
| 147. | (Magnusen, 2010) | Out of scope: comparison of coach behaviours among different levels of performance; only leadership styles, no mental health relation. |
| 148. | (Magrum et al., 2019) | No full text available |

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| 149. | (Mazerolle & Eason, 2014) | Cluster: ST (Stressors) and MHC (Mental health of coaches) |
| 150. | (Mazerolle & Eason, 2018) | Cluster: ST (Stressors) and MHC (Mental health of coaches) |
| 151. | (Mazerolle, Eason, et al., 2018) | Cluster: OS (Organizational support) and MHC (Mental health of coaches) |
| 152. | (Mazerolle et al., 2013) | Cluster: MHC (Mental health of coaches) |
| 153. | (Mazerolle & Hunter, 2018) | Cluster: MHC (Mental health of coaches) |
| 154. | (Mazerolle & Pitney, 2011) | Cluster: MHC (Mental health of coaches) |
| 155. | (Mazerolle, Pitney, et al., 2018) | Cluster: MHC (Mental health of coaches) |
| 156. | (Mazzer & Rickwood, 2009) | Out of scope: mental disorders |
| 157. | (Mazzer & Rickwood, 2015) | Age: coaches "of 12–18 year olds" |
| 158. | (McGale et al., 2011) | Cluster: Awareness (intervention) |
| 159. | (McMahon & McGannon, 2020) | Cluster: ST (Stressors) and MHA (Mental health of athletes) |
| 160. | (Mensch & Wham, 2005) | Cluster: ST (Stressors) and MHC (Mental health of coaches) |
| 161. | (Mladenović, 2010) | Out of scope: no mental well-being variable; only motivation |
| 162. | (Morgan, 2018) | Cluster: SC (Social capital and support), OS (Organizational support) |
| 163. | (Morris & Van Raalte, 2016) | Cluster: SC (Social capital and support), OS (Organizational support) |
| 164. | (Newman & Weiss, 2018) | Out of scope: clinical treatment/ injured athletes |
| 165. | (Nicholls, Levy, Carson, et al., 2016) | Cluster: MHC (Mental health of coaches) and MHA (Mental health of athletes) |
| 166. | (Norris et al., 2020) | Out of scope: No mental well-being |
| 167. | (Occhino et al., 2014) | Paper type: un-systematic review / no study |
| 168. | (Pagaduan et al., 2011) | Paper type: un-systematic review / no study |

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| 169. | (Palmer, 2013) | Out of scope |
| 170. | (Pedersen et al., 2017) | Cluster: Awareness (intervention) |
| 171. | (Pedro & Veloso, 2018) | Age: Range = 12-31; Mage < 17,50 |
| 172. | (Pineda-Espejel et al., 2015) | Out of scope: Precompetitive anxiety |
| 173. | (Pulido et al., 2019) | Age: coaches of children |
| 174. | (Richardson & Fletcher, 2020) | Cluster: Awareness (intervention) + Mediators (affect) |
| 175. | (Rintaugu et al., 2014) | Cluster: ST (Stressors) |
| 176. | (Robbins et al., 2017) | No full text available |
| 177. | (Rodrigues et al., 2009) | Out of scope: no mental health |
| 178. | (Rodríguez-Pomeda et al., 2018) | Cluster: OS (Organizational support) |
| 179. | (Rogowska, 2018) | Cluster: ST (Stressors) |
| 180. | (Romero Carrasco et al., 2013) | Out of scope: clinical (Psychopathology) |
| 181. | (Rosso, 2015) | Cluster: SC (Social capital and support) |
| 182. | (Roux, 2007) | Age: high school and primary school sports coaches |
| 183. | (Ruddock et al., 2019) | Cluster: ST (Stressors) |
| 184. | (Ruddock et al., 2017) | Cluster: MHC (Mental health of coaches) |
| 185. | (Ruiz-Juan & Zarauz, 2013) | Out of scope: precompetitive Anxiety |
| 186. | (Rumbold et al., 2018) | Cluster: ST (Stressors) and OS (Organizational support) |
| 187. | (Rutkowska & Gierczuk, 2012) | Cluster: MHC (Mental health of coaches) |
| 188. | (Sadberry & Mobley, 2013) | Cluster: MHA (Mental health of athletes) |
| 189. | (Samie et al., 2015) | Out of scope: no coaching (only mentors, but not as trainers or coaches) |
| 190. | (Sanchez-Lastra et al., 2019) | Cluster: MHA (Mental health of athletes)<br>Out of scope: No coaching |
| 191. | (Sancho & Juan, 2013) | Out of scope: Precompetitive anxiety |

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| 192. | (Saquero et al., 2018) | Cluster: ST (Stressors) |
| 193. | (Saunders & Pink, 2015) | Cluster: OS (Organizational support) |
| 194. | (Schinke et al., 2018a) | Paper type: position statement |
| 195. | (Schneider & Stier Jr., 2006) | Out of scope: performance oriented |
| 196. | (Schulenkorf & Sugden, 2011) | Age: children and adolescents |
| 197. | (Secades et al., 2014b) | Cluster: MHA (Mental health of athletes) |
| 198. | (Shanmugam et al., 2013) | Cluster: ST (Stressors) and MHA (Mental health of athletes) |
| 199. | (Shapcott et al., 2007) | Cluster: ST (Stressors) |
| 200. | (Shipherd et al., 2019) | Out of scope: influence of coach turnover; too specific; coach characteristics that cannot be changed |
| 201. | (Solstad & Strandbu, 2019a) | Cluster: Awareness (intervention) |
| 202. | (Solstad & Strandbu, 2019b) | Cluster: Awareness (intervention) |
| 203. | (Spaaij, 2012) | Cluster: Awareness (intervention) |
| 204. | (Spence et al., 2005b) | Cluster: Awareness (intervention) |
| 205. | (Stefanac, 2015) | Paper type: no study |
| 206. | (Super et al., 2018) | Cluster: Awareness (intervention) |
| 207. | (Szabo et al., 2019) | Cluster: OS (Organizational support) and MHA (Mental health of athletes) |
| 208. | (Tamminen et al., 2016) | Cluster: SC (Social capital and support), OS (Organizational support) and MHA (Mental health of athletes) |
| 209. | (Ugrenovic, 2020) | Out of scope: burnout (mental health of coaches) |
| 210. | (Valadez Jimenez et al., 2016) | Cluster: ST (Stressors) and MHC (Mental health of coaches) |
| 211. | (Van Hoye et al., 2016) | Age: Range = 8-14 |
| 212. | (Various authors, 2016) | Paper type: no study - a question (How can psychological resilience be developed in sport performers?) was asked to experts |

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| **213.** | (Vidic et al., 2018) | Cluster: ST (Stressors…) and MHA (Mental health of athletes) |
| **214.** | (Vigário et al., 2020) | Level: Elite |
| **215.** | (Wagstaff et al., 2018) | Cluster: ST (Stressors…), MHC (Mental health of coaches) and MHA (Mental health of athletes) |
| **216.** | (Wang & Calloway, 2013) | No full text available |
| **217.** | (Webster et al., 2013) | Aim out of scope: development of an observation system<br>Age: high school varsity athletes |
| **218.** | (White et al., 2015) | Age: All gymnasts were <18 |
| **219.** | (Yildirim et al., 2012) | Cluster: MHC (Mental health of coaches) |
| **220.** | (Zimmerman & Herzog, 2009) | Paper type: no study, practical paper for conflict resolution for AT / coaches |
| **221.** | (Zurita Ortega et al., 2014) | Age: Range = 14-18 |

# APPENDIX 3: Study characteristics

### Table 8: Study characteristics. Cluster: Awareness and mental health literacy

| REFERENCE | OBJECTIVE (extracted from the article) | STUDY DESIGN | SAMPLE: SIZE (N) + GENDER (%F/M) + AGE (R/M/SD) + SPORTS + LEVEL<br>*R= RANGE; M= MEAN; SD= STANDARD DEVIATION* | COUNTRY OF STUDY | INTERVENTION / SETTING / TIME FRAME |
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| (Anderson & Pierce, 2012) | To explore four assumptions associated with community mental health literacy programs: that individuals would increase their mental health knowledge; increase their confidence to help others experiencing mental ill health; report reduced stigmatising attitudes towards mental illness; and help others experiencing mental ill health. | Mixed Methods Longitudinal | N = 162 sports team coaches and other club leaders in MHFA<br>n Pre-training questionnaire = 150, 93%<br>n Follow-up data = 39, 25%<br>n completed an individual or focus group interview = 26, 17%.<br><br>35% female; 65% male<br>Mage = 42; SD = 11.3<br>Sport: football and netball<br>Level: club | Australia | * The community mental health literacy initiative.<br>* Rural Victorian football and netball clubs.<br>* Two phases during 2007–2009. |
| (Bapat et al., 2009) | To describe and evaluate a training program designed to improve mental health literacy in junior sporting club coaches and leaders. | Quantitative Longitudinal | N = 40 coaches and leaders from junior AFL football and netball leagues in Barwon, Victoria<br>60% female; 40% male<br>Rage = 20–59; Mage males = 42.88; | Australia | * *Read the Play*, a mental health literacy training programme<br>* Barwon region |

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| | | | Mage females = 34.36;<br>Sport: netball (n = 21; 90.5% female), AFL football (n = 13; 92.3% male), and both netball and football (n = 6; 66.6% female). | | sporting clubs<br>* 8 hr. delivered in three evening sessions over three consecutive weeks |
| (Boardley et al., 2008) | To examine the relationships between athletes' perceptions of coaching effectiveness, based on the coaching efficacy model, and their effort, commitment, enjoyment, self-efficacy, and prosocial and antisocial behaviour in rugby union | Quantitative Cross-sectional | N = 166<br>100% male<br>Mage = 26.5; SD = 8.5<br>Level: recreational (n = 23); amateur (n = 63); university (n = 54); professional (n = 25); one participant did not answer this question | United Kingdom | *** N/A |
| (Breslin, Haughey, et al., 2017) | To apply the Theory of Planned Behaviour to determine the effect of a mental health awareness programme on sports coaches' knowledge and intentions to offer support to athletes who experience mental health problems. | Quantitative 2x2 Quasi-experimental | N = 244 coaches<br>51.9% male; 47.5% female<br>Age: not reported<br>sport: Gaelic sports (Irish team sports: football, hurling and camogie) 30.3%; soccer 10.7%; swimming 9.0% and rugby 6.1%<br><br>n CG = 60 (24.6%)<br>54.2% male; 45.8% female<br>sport: Gaelic sports 30.0%; swimming 25.0%; and soccer 8.3% | Northern Ireland | * **IG -->** *Mood Matters in Sport* Mental Health Educational Programme; **CG -->** Coaching programme without mental health content.<br><br>** Not reported |

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| | | | n IG = 184 (75.4%)<br>51.1% male; 48.9% female<br>sport: Gaelic sports 30.4%; soccer 11.4%; and rugby 7.1% | | |
| (Breslin, Shannon, et al., 2017a) | To conduct a systematic review determining the effect of sport-specific mental health awareness programs to improve mental health knowledge and help-seeking among sports coaches, athletes and officials. The second aim was to review the study quality and to report on the validity of measures that were used to determine the effectiveness of programs. | systematic review | Ten studies were included from the 1216 studies retrieved: four comprising coaches or service providers, one with officials, four with athletes, and one involved a combination of coaches and athletes. | Northern Ireland | N/A |
| (Halterman et al., 2020) | To examine perspectives of college football coaches in order to further expand the understanding of college football coaches' knowledge about sport psychology by assessing coaches' abilities to identify mental health concerns and their willingness to refer student-athletes to mental health services. | Qualitative Descriptive | N = 9 football coaches<br>%fe/male: nor reported<br>Rage = 21-29 (n=1), 30-39 (n=5), 50-59 (n=1), and 60-69 (n=2).<br>Level: NCAA DI, DII, DIII<br>Sport: Football | United States of America | N/A |
| (Kroshus et al., 2019) | To determine whether completion of the National Collegiate Athletic Association's "Supporting Student-Athlete Mental Wellness" online module for coaches | Quantitative Longitudinal | N completed pre-test surveys = 969<br>College Head coaches<br>41,6% female; 57.9% male; 0,5% prefer not to answer; | United States of America | * National Collegiate Athletic Association's "Supporting |

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| | increased mental health literacy, reduced stigma, and increased intentions to: 1) communicate proactively with team members about the importance of mental health care seeking, and 2) respond appropriately to support an athlete believed to be struggling with a mental health issue. | | Mage = 43.10; SD = 11.48<br>Sport: 20 sports, with the most frequent representation from track and/or cross country running (20.19%), golf (20.19%), basketball (13.14%) and soccer (11.15%)<br>Level: Division I institution (33.12%); Division II institution (24.32%); Division III institution (42.56%)<br><br>n completed post-test surveys = 347<br>43,6% female; 55,8% male; 0,6% prefer not to answer<br>Age: not reported<br>Level: Division I institution (32,65%); Division II institution (22,74%); Division III institution (44,61%) | | Student-Athlete Mental Wellness" online module for coaches<br>** Not reported |
| (Langan et al., 2013a) | To systematically review and evaluate the literature on the effectiveness of coach education interventions. Specifically, we aimed to: (a) describe the non-formal coach education interventions aimed at coaches'' interpersonal knowledge base, (b) highlight underpinning theoretical models, (c) assess the methodological quality of articles | Systematic review | Four interventions fulfilled the inclusion criteria and were thus systematically reviewed. | Ireland and Australia | N/A |

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| | evaluating these interventions, (d) identify participant characteristics, and (e) establish the effect of these interventions on athletes'' cognitive, affective, and behavioural outcomes. | | | | |
| (Liddle et al., 2017) | To review current approaches by sporting organizations to mental health promotion, prevention and early intervention by searching peak body websites, as well as the wider Internet. | Review of Websites | A systematic search for any mention of mental health within the national sporting organization websites for all 56 sports from the Olympic Games, with an additional six of the most popular Australian sports: the Australian Football League (AFL), National Rugby League (NRL), netball, cricket, touch football and oztag. | Australia | N/A |
| (Pierce et al., 2010) | To report on a project, Coach the Coach, in which Australian rural football clubs were the setting and football coaches the leaders in providing greater mental health awareness and capacity to support early help seeking behaviour among young males experiencing mental health difficulties, especially depression. Coaches and other football club leaders were provided with Mental Health First Aid (MHFA) training. | Mixed methods Longitudinal | n football club leaders = 36 (completed MHFA training)<br>2,8% female; 97,2% male<br>Rage = 25-64; Mage = 45<br><br>n players = 275 (completed the initial questionnaire)<br>Rage = 15-50; Mage = 21<br>n players = 98 (completed the follow up survey) | Australia | * Mental Health First Aid (MHFA) (part of Coach the Coach project)<br>* Football clubs in a rural Australian football league<br>* Coach the Coach project was undertaken during |

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| | | | CG = 96 (questionnaires obtained from players in the comparison football league that had not been involved in MHFA training of football club leaders.) | | 2007 and early 2008 |

**Table 9: Study characteristics. Cluster: Coach-athlete relationship**

| REFERENCE | OBJECTIVE (extracted from the article) | STUDY DESIGN | SAMPLE: SIZE (N) + GENDER (%F/M) + AGE (R/M/SD) + SPORTS + LEVEL<br>*R= RANGE; M= MEAN; SD= STANDARD DEVIATION* | COUNTRY OF STUDY | INTERVENTION / SETTING / TIME FRAME |
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| (Braun & Tamminen, 2019) | To explore the strategies coaches used to try and regulate their athletes' emotions, and to explore the relationship and contextual factors influencing coaches' IER strategy use. | Qualitative Longitudinal multiple case study | N = 15: five cases, each consisting of one coach and two athletes<br>Age: Not reported (Varsity athletes)<br>Sport: Individual varsity sports including fencing, swimming, track and field, Nordic skiing, and squash<br><br>n Coaches = 5<br>100% male<br><br>n Athletes = 10<br>60% female; 40% male | Canada | ** N/A<br>* Three weeks |
| (Davis & Jowett, 2014) | To examine whether athletes' attachment styles with the coach were linked to aspects of the coach-athlete relationship quality and, in turn, whether relationship quality was linked to athletes' well-being. | Quantitative Cross-sectional | N = 192<br>65.5% males; 35.5% females<br>Rage = 16-32; Mage = 20.14; SD = 2.66<br>Level: university (14.6%), club (31.8%), regional (22.9%), national (17.2%), and international (12.9%)<br>Sport: Individual and team sports (e.g., netball, football, volleyball, basketball, | United Kingdom | N/A |

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| | | | tennis, ice skating, gymnastics, and swimming) | | |
| (Dorgo et al., 2009) | To compare changes in perceived physical, mental, and social function measured by the Short Form-36 (SF36vr2) in a group of older adults who were trained by peer mentors (PMs) versus a similar group trained by qualified kinesiology student mentors (SMs). | Quantitative Longitudinal | N = 60 older adults<br>48,3% female; 51,7% male<br>Rage = + 60; Mage = 68.7; SD = 6.1<br><br>Individuals were randomly assigned to one of the two groups:<br>- SM group (50% female; 50% male)<br>- PM group (46,7% female; 53,3% male) | United States of America | * Fitness program: SM group (trained by qualified kinesiology student mentors) & PM group (trained by peer mentors)<br>* Fitness Research Facility at the University of Texas, El Paso<br>* 14-week (Feb. 2006 to Dez. 2007) |
| (Felton & Jowett, 2013a) | To examine whether basic needs satisfaction is a mechanism by which athletes' insecure attachment styles are associated with levels of well-being. | Quantitative Cross-sectional | N = 430 athletes<br>61% female; 39% male<br>Rage = 15-35; Mage = 20.4; SD = 2.71<br>Sport: individual (59%) and team (41%) sports<br>Level: club (33%), university (20%), | United Kingdom | N/A |

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| | | | regional, national, and international (47%) | | |
| (Felton & Jowett, 2013b) | To examine the links of the social environment, as defined by coach interpersonal behaviours and coach-athlete relationships, with athletes' psychological need satisfaction and indexes of well-being. | Quantitative Cross-sectional | N = 300 athletes<br>64% female; 36% male<br>Rage = 15-30; Mage = 20.4; SD = 2.44<br>Sport: individual (41%) and team (59%) sports.<br>Level: club (32%); university (20%); regional (21%); national (17%); international (10%). | United Kingdom | N/A |
| (Felton & Jowett, 2015) | To examine the mediating role of basic psychological need thwarting between perceptions of athlete attachment to the coach and indexes of athlete well/ill-being. | Quantitative Cross-sectional | N = 241<br>64% female; 36% male<br>Rage = 18-31 ; Mage = 20.74; SD = 2.23<br>Sports: individual (27%) and team (65%) sports<br>Level: club (7%), university (50%), regional/county (20%), and national/ international (23%) | United Kingdom | N/A |
| (Felton et al., 2020) | To examine the complementarity dimension of the coach-athlete relationship in relation to individual and group outcomes, specifically well-being and cohesion. | Quantitative Cross-sectional | N athletes = 304<br><br>**Study 1**:<br>n athletes = 106<br>63,2% female; 36,8% male<br>Mage = 19.91; SD = 1.54<br>Sport: more than 20 types, with the majority performed in hockey (n=18), football (n=14), rugby (n=12), and water | United Kingdom | N/A |

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| | | | polo (n=12).<br>Level: university (31%); club (26%); regional (23%); national (9%); international (10%); other levels of performance (1%).<br><br>**Study 2**:<br>n athletes = 198<br>47% female; 53% male<br>Mage = 20.84; SD = 2.96<br>Sport: the majority participated in football (28%), rugby (20%), and netball (19%)<br>Level: university (62%); club (13%); regional (19%); national (2%); international (4%) | | |
| (Katagami & Tsuchiya, 2017) | To investigate the received support experienced by university student athletes respectively from coaches and teammates over the course of a week, and examine its relationship with self-confidence and feelings of adaptation. | Quantitative Cross-sectional | N = 231 university student athletes<br>34,2% female; 65% male; 0,8% missing value<br>Mage = 19.98; SD = 0.49<br>Sports: individual sports (n＝53; e.g. swimming, track and field, gymnastics, Judo, etc.), or team sports (n＝155; e.g. football, basketball, lacrosse, baseball, etc.). Missing values were 23. | Japan | N/A |

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| (Koh et al., 2019) | To examine university coaches' implementation strategies in providing various forms of social support to their athletes. | Qualitative Interpretivist | N = 8 sport coaches<br>50% female; 50% male<br>Rage = 28-70; Mage = 48.38; SD = 14.96<br>Sport: team (i.e. floorball, football, netball and handball; n = 4) and individual sports (i.e. squash, table tennis, track and field and bowling; n = 4). | Singapore | N/A |
| (Lafrenière et al., 2011) | To examine the role of coaches' passion for coaching in athletes' perceptions of the quality of the coach–athlete relationship. | Quantitative Cross-sectional | N = 103 coach-athlete dyads<br>n coaches = 103<br>9,7% female; 90,3% male<br>Mage = 44.23; SD = 7.94<br><br>n athletes = 103<br>38,8% female; 61,2% male<br>Mage = 22.04; SD = 5.29<br><br>Sport: e.g. gymnastics, volleyball, football, etc.<br>Level: club (N = 39; 37.9%), county (N = 5; 4.9%), university (N = 5; 4.9%), national (N = 41; 39.8%), and international (N = 13; 12.6%). | United Kingdom?? or French Canada??? | N/A |

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| (Lafrenière et al., 2008) | To understand the role of harmonious (HP) and obsessive (OP) passion in the quality of coach-athlete relationships. | Quantitative Cross-sectional | **Study 1**:<br>N = 157 British college athletes<br>48,4% female; 51,6% male<br>Mage = 20.23; SD = 1.74<br>Sport: Team sports (e.g., hockey, rugby, netball).<br>Level: club (N = 10; 6%), county (N = 8; 5%), university (N = 106; 68%), national (N = 13; 8%), international (N = 20; 13%).<br><br>**Study 2**:<br>N = 106 French-Canadian coaches<br>8,5 female; 89,6% male; 1,9% unspecified<br>Mage = 35.48; SD = 10.83<br>Sport: e.g. gymnastics, basketball, football | United Kingdom and French Canada | N/A |
| (Lu et al., 2016) | To examine the conjunctive effects of athletes' resilience and coaches' social support on the relationship between life stress and burnout. | Quantitative Cross-sectional | N = 218<br>27% female; 73% male<br>Rage = 18-25; Mage = 20.0; SD = 1.3<br>Sport: individual (track and field, taekwondo, tennis, and archery; n = 162) or team sports (basketball and baseball; n = 56).<br>Level: Division-I college student-athletes | China (Taiwan) | N/A |

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| (Moen et al., 2019) | To study the potential mediating role of athletes' resiliency in the effect of the working alliance of the coach and the athlete on the athletes' levels of burnout. | Quantitative Cross-sectional | N = 670 athletes<br>51.7% female; 49.3% male<br>Rage = 17-20; Mage = 18<br>Sport: football (18%), handball (18%), cross country skiing (11%), biathlon (9%), ice-hockey (5%), alpine skiing (5%), cycling (5%) and track and field (4%).<br>Level: 78% of the junior athletes in the current study had ambitions to become future elite athletes in their sports, whereas 22% did not. | Norway | N/A |
| (Nicholls, Levy, Jones, et al., 2016) | To assess an a priori model that included perceptions of coach behaviour, coach-athlete relationship, stress appraisals, and coping. | Quantitative Cross-sectional | N = 274 athletes<br>26,6% female; 73% male; 0,4% unspecified<br>Rage = 16-45; Mage = 21.59; SD = 4.45<br>Sport: team (n = 250) and individual sports (n = 24), including both contact sports (n = 216) and non-contact sports (n = 58).<br>Level: international (n = 81), national (n = 54), county (n = 38), club (n = 36), and beginner (n = 60). Unspecified (n = 5) | United Kingdom<br><br>(participants resided in the UK, Australia, and Hong Kong (China)) | N/A |

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| (Nicholls & Perry, 2016) | To assess dyadic coping, perceptions of relationship quality and primary stress appraisals of challenge and threat among coach-athlete dyads. | Quantitative Cross-sectional | n = 158 athletes<br>62% male; 38% female<br>Mage = 22.23; SD = 5.73<br><br>n = 119 coaches<br>23,4% female; 76,6% male<br>Mage = 32.43; SD = 10.90<br><br>Sport: team sports (132 dyads) and individual sports (26 dyads).<br>Level: amateur (n = 123), semi-professional (n = 31), professional (n = 4) | United Kingdom | N/A |
| (Sagar & Jowett, 2015) | To investigate individual differences and social-contextual characteristics as predictors of fear of failure in the sport domain. Specifically, it examined: (1) self-control and socio-contextual characteristics in the quality of relationships between coaches and athletes as potential correlates of fear of failure; and (2), the capacity of self-control and relationship quality to predict the undesired behavioural tendencies of athletes' fear of failure. | Quantitative Cross-sectional | N = 367 athletes<br>45% female; 55% male<br>Rage = 18-27; Mage = 20.11; SD = 1.45.<br>Sport: a variety of team and individual sports: rugby, athletics (10% each), American football, basketball, gymnastics, soccer (9% each), swimming, netball, rowing, volleyball, triathlon, tennis, badminton (7% each), and judo (2%)<br>Level: regional/county (65%), national (19%), international (16%) | United Kingdom | N/A |
| (Staff et al., 2017) | To qualitatively explore coping from an interpersonal perspective (i.e., dyadic coping) in coach-athlete relationships. | Qualitative Multiple case study | 5 coach-athlete dyads:<br>N coaches = 5<br>Mage = 37.65; SD = 10.07 | United Kingdom | N/A |

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| | | | N athletes = 5<br>Mage = 21.85; SD = 2.92<br><br>Sport: individual sports (track and field, n = 3; squash, n = 1; triathlon, n = 1; swiMixed Methodsing, n = 1).<br>Level: University competition or above | | |
| (Trouillou d & Amiel, 2011) | To evaluate how the reflected appraisals, the perception of how athletes are viewed by coaches, parents and teammates, affects athletes' self-perception. | Quantitative Cross-sectional | N = 372 athletes<br>41,4% female; 58,6% male<br>Rage = 18-40; Mage = 21.03; SD = 2.81.<br>Sport: team sports (n = 165; 44.35%), tennis (n = 50; 13.44%), track and field (n = 29; 7.80%), swimming (n = 22; 5.91%), gymnastics (n = 21; 5.65 %), fighting sports (n = 20; 5.38%), skiing (n = 19; 5.11%), and diverse others sports (n = 46; 12.36%).<br>Level: local (n = 120; 32.26%), regional (n = 143; 38.44%) national (n = 109; 29.30%). | France | N/A |
| (van Kleef et al., 2019) | To examine how coaches' emotional expressions influence players' affect, cognition, and behaviour. | Quantitative<br>* Study 1: cross-sectional<br>* Study 2: cross-lagged with three | **Study 1**:<br>Sport: baseball/softball<br>n coaches = 29 (one coach returned an empty questionnaire).<br>14% female; 86% male<br>Mage = 48.03; SD = 10.26 | The Netherlan ds | ** N/A<br>* three measurement points (before, during, and after the game) |

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| | | measurement points (before, during, and after the game). | n players = 268<br>34.6% female; 61.2% male; one athlete did not disclose gender information.<br>Mage = 27.64; SD = 10.29<br><br>**Study 2**:<br>Sport: soccer<br>n players = 376 players<br>10.4% female; 89.6% male<br>Mage = 21.05; SD = 5.50<br><br>n coaches = 30<br>100% male<br>Mage of 41.17; SD = 11.67 | | |

**Table 10: Study characteristics. Cluster: Coaching behaviour**

| REFERENCE | OBJECTIVE (extracted from the article) | STUDY DESIGN | SAMPLE: SIZE (N) + GENDER (%F/M) + AGE (R/M/SD) + SPORTS + LEVEL<br>*R= RANGE; M= MEAN; SD= STANDARD DEVIATION* | COUNTRY OF STUDY | INTERVENTION / SETTING / TIME FRAME |
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| (Alcaraz et al., 2015) | To test how behavioural regulations are mediated between basic psychological needs and psychological well-being and | Quantitative Cross-sectional | N = 302 development coaches<br>18% female; 82% male<br>Rage = 15–53; Mage = 25.97; SD = 8.16<br>Sport: Basketball (58%) and football | Spain | N/A |

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| | ill-being in a sample of team-sport coaches. | | (42%)<br>Level: regional | | |
| (Amorose & Anderson-Butcher, 2007) | To explore and better understand the organisational culture of CrossFit | Quantitative Cross-sectional | N = 581<br>56,5% female; 45,3% male<br>Sport: a variety of individual and team sports<br>Rage: 13-25; Mage = 17.50; SD = 2.30) | United States of America | N/A |
| (Appleton & Duda, 2016) | To examine whether a coach-created empowering motivational climate moderated the debilitating effects of a disempowering motivational climate on athletes' health and optimal functioning. | Quantitative Cross-sectional | N = 406 athletes<br>32.5% female; 67.5% male<br>Rage = 13-53; Mage =23.1; SD =8.3<br>Level: club (n =254), county (n =50), national (n =102).<br>Sport: a variety of individual (n =61) and team (n =345) sports | United Kingdom | N/A |
| (Balaguer et al., 2008) | To test a model of the hypothesized motivational sequence among the autonomy support, basic needs, self-determined motivation, self-esteem and life satisfaction on the basis of the self-determination theory (Deci and Ryan, 1985, 2000). | Quantitative Cross-sectional | N = 301 athletes<br>43.2% female; 56.8% male<br>Mage= 24.1; SD = 4.7<br>Sports: a variety of sports. | Spain | N/A |
| (Bartholomew, Ntoumanis, Ryan, et al., | To explore (through three studies) the social-environmental conditions that satisfy versus thwart psychological needs | Quantitative Cross-sectional | **Study 1**:<br>N = 303 athletes<br>100% female<br>Rage = 16-25; Mage = 19.74; SD = 2.19 | United Kingdom | **Study 1**: N/A |

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| 2011): study 1 | and, in turn, affect psychological functioning and well-being or ill-being. | | Level: club (n = 51), county (n = 88) regional (n = 57), national (n = 82), or international (n = 19) level; 6 athletes did not report their competition level.<br>Sport: aesthetic sports such as gymnastics and figure skating (n = 212); or weight-related sports such as light-weight rowing and long-distance running (n = 91) | | |
| (Blanchard et al., 2009) | To test the impact of cohesiveness and coaches' controlling interpersonal style on athletes' perceptions of autonomy, competence and relatedness | Quantitative Cross-sectional | N = 207 participants<br>36,7% female; 59% male; 4,3% did not report their gender.<br>Rage = 16-22; Mage = 18; SD = 1.17<br>Level: inter-cegep (i.e., equivalent of grade 12) basketball league in the Province of Quebec, Canada.<br>Sport: Basketball | Canada | *** N/A |
| (Borges-Silva et al., 2017) | To analyse the relationships of perceived basic psychological needs, intrinsic motivation and esteem, and life satisfaction in women's fitness training. | Quantitative Cross-sectional | N = 259<br>100% female<br>Rage = 18-58; Mage = 34.76; SD = 10.69<br>Sport: Fitness classes (zumba, batuka, aerobic, spinning, step, body pump, etc.) | Spain | *** N/A |
| (Breske et al., 2017) | To examine the potential for a motivational priming session to buffer the psychophysiological stress response to an ego-involving climate in a physical activity setting. | Quantitative RCT | N = 38<br>n CG = 19<br>n IG = 19<br>100% male<br>Rage = 18-30; Mage = 20.68; SD = 2.66 | United States of America | * (t1) **IG**: exposed to a 10-12 min informational session about |

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| | | | | | AGPT (Achievement Goal Perspective Theory);<br>CG: received a priming session that was neutral in regards to their achievement goals<br>(t2) Juggling sessions<br>** Not reported |
| (Healy et al., 2014) | To clarify mixed results in the literature exploring coach behaviours, basic psychological needs, goal motivation, and well- and ill-being. | Quantitative Cross-sectional & longitudinal | N = 241 athletes<br>34,4% female; 65,6% male<br>Mage = 23.06; SD = 5.45<br>Sport: team sports: hockey = 132; rugby = 16; soccer = 48; volleyball = 23; lacrosse = 11; Gaelic football = 11<br>Level: regional | United Kingdom | N/A<br>* At the beginning of the season: questionnaires (N = 241) + saliva samples to assess physical ill-being (n = 70)<br>* At the end of the season: goal |

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| | | | | | motivation and attainment reported (n = 98). |
| (Hodge & Lonsdale, 2011) | To examine whether the relationships between contextual factors (i.e., autonomy-supportive vs. controlling coaching style) and person factors (i.e., autonomous vs. controlled motivation) outlined in self-determination theory (SDT) were related to prosocial and antisocial behaviours in sport. We also investigated moral disengagement as a mediator of these relationships. | Quantitative Cross-sectional | N = 292 competitive athletes<br>60% female; 39% male; 1% did not report gender<br>Mage = 19.53; SD = 1.6<br>Level: experienced club-level (n = 77), provincial age-grade (n = 133), national age-group (n = 38), provincial senior (n = 28), and national senior (n = 16)<br>Sport: 39 different team (e.g., netball n = 45; soccer n = 32, field hockey n = 27, basketball n = 14) and individual (e.g., track and field, n = 19; cycling n = 8, swimming n = 7, tennis n = 6) sports | New Zealand | N/A |

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| (Matosic et al., 2017) | (1) To examine the link between a well-researched personality trait, namely narcissism, and two types of coaching interpersonal style, namely autonomy-supportive and controlling styles. (2) To test the mediating roles of dominance and empathic concern in explaining the relations between narcissism and the two coaching interpersonal styles. | Quantitative Cross-sectional | N = 211 professionally qualified coaches<br>15,6% female; 84,4% male<br>Rage = 18-81; Mage = 38.30; SD = 14.16<br>Sport: a variety (n = 28) of sports (e.g., football, rugby, cricket, swimming, athletics, tennis). | United Kingdom | N/A |
| (Matosic et al., 2016) | To test a model linking coaches' (n = 59) own reports of narcissistic tendencies with athletes' (n = 493) perceptions of coach controlling behaviours, experiences of need frustration, and attitudes toward doping. | Quantitative Cross-sectional | N athletes = 493<br>33,5% female; 66,5% male<br>Rage = 16-53; Mage = 21.22; SD = 3.65<br><br>N accredited coaches = 59<br>18,6% female; 81,4% male<br>Rage = 20-68; Mage = 35.90, SD = 12.71<br><br>Sport: Rugby, soccer, swimming<br>Level: regional, national, international | United Kingdom | N/A |
| (Norris et al., 2017) | To conduct a systematic review of literature on stressors, coping, and well-being among sports coaches. | Systematic review | 38 studies that were conducted with 4188 sports coaches. This sample consisted of 19 qualitative, 17 quantitative, and two mixed methods studies | United Kingdom | N/A |
| (Schüler et al., 2016) | To examine whether implicit or explicit autonomy dispositions moderate the | Quantitative Cross-sectional | **Study 1:**<br>N = 187 undergraduate students<br>87,2% female; 12,8% male | Switzerland / United | N/A |

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| | relationship between felt autonomy and well-being. | | Mage = 21.6; SD = 5.76<br><br>**Study 2**:<br>N = 127 physically inactive persons<br>64,6% female; 35,4% male<br>Rage = 15-64; Mage = 29.9; SD = 13.9 | States of America | |
| (A. Smith et al., 2007) | To examine the motivational processes underlying goal striving in sport as well as the role of perceived coach autonomy support in the goal process. | Quantitative Cross-sectional | N = 210 regularly training athletes<br>49,1% female; 49,5% male; 1,4% unspecified<br>Rage =18-37; Mage = 21.02; SD = 2.88<br>Level: locally to international<br>Sport: a variety of individual and team sports (e.g., football, netball, and badminton. | United Kingdom | N/A |
| (A. Smith et al., 2010) | To investigate the influence of coach behaviours and implementation intentions on goal striving in sport:<br>(1) to further examine the role of goal motives in sport and specifically to address some of their antecedents and consequences using a prospective design.<br>(2) To investigate the interactions (or lack thereof) between autonomous and controlled goal motives and implementation intentions in predicting goal progress and relative well-being. (3) to examine whether the motives | Quantitative Prospective | n final = 108<br><br>**Time 1**:<br>N = 189 regularly training athletes<br>50,3% female; 46% male; 3,7% unspecified<br><br>**Time 2** (8 weeks later):<br>n = 108<br>41,7% female; 58,3% male<br>Rage: 18-67; Mage = 23.97; SD = 9.77<br>Sport: variety of individual (i.e., badminton, triathlon, track athletics) and | United Kingdom | N/A<br>8 weeks + online follow up |

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| | underlying implementation intentions might be important in understanding how goal motives predict progress and well-being. | | team sports (i.e., rowing, cricket, netball, basketball, soccer, field hockey).<br>Level: local (17.6%), regional (15.7%), national (19.4%), international (6.5%), university (39.8%). | | |
| (Stebbings et al., 2011) | To test a model of potential antecedents of perceived coach autonomy supportive and controlling behaviours using the SDT framework. | Quantitative Cross-sectional | N = 443 coaches<br>29,3% female; 70,7% male<br>Rage = 18-75; Mage = 41.06; SD = 14.24<br>Level: recreational (n = 52), club (n = 174), regional (n = 73), national (n = 80), international / professional (n = 64). | United Kingdom | N/A |
| (Stebbings et al., 2015) | To explore sports coaches' psychological well-being (positive affect and integration of coaching with one's sense of self) and ill-being (negative affect and devaluation of coaching) as predictors of their perceived autonomy supportive and controlling interpersonal styles towards individuals under their instruction. | Quantitative Longitudinal | N = 195 coaches<br>21% female; 79% male<br>Rage = 18-75; Mage = 46.24; SD = 13.26<br>Level: recreational (n = 20), club (n = 81), regional (n = 37), national (n = 41), international/ professional (n = 16).<br><br>n who completed all 3 measures = 119<br>n who completed 2 measures = 76 | United Kingdom | ** N/A<br>* Measures at three time points across an eleven-month period, with time points two and three approximately five and eleven months after time point one, respectively. |

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| (Stebbings et al., 2012) | To test a BPNT-based model of potential antecedents of perceived coach interpersonal behaviour | Quantitative Cross-sectional | n = 418 coaches<br>26,8% female; 73,2% male<br>Rage = 18-78; Mage = 43.68; SD = 14.41<br>Level: recreational (n = 66), club (n = 187), county (n = 86), national (n = 51), international/professional (n = 28) | United Kingdom | N/A |
| (Torregrosa et al., 2014) | To analyse the relationship of the controlling coach behaviour, perceived autonomous support practitioners about the coach and the psychological mediators with the life satisfaction in healthy exercise practitioners. | Quantitative Cross-sectional | N = 104 non-competitive exercise practitioners<br>100% male<br>Rage: 18-70; Mage = 28.38; SD = 11.66<br>Sport: wellness | Spain | N/A |
| (Wayment & McDonald, 2017) | To examine a novel personal fitness training program that combines personal training principles in a small-group training environment. | Mixed Methods Cross-sectional | N = 98<br>65,3% female; 32,7% male<br>Rage = 19-78; Mage = 46.52; SD = 14.15<br>Sport: Fitness | United States of America | N/A |

## Table 11: Study characteristics. Cluster: Critical perspectives

| REFERENCE | OBJECTIVE (extracted from the article) | STUDY DESIGN | SAMPLE: SIZE (N) + GENDER (%F/M) + AGE (R/M/SD) + SPORTS + LEVEL<br>*R= RANGE; M= MEAN; SD= STANDARD DEVIATION* | COUNTRY OF STUDY | INTERVENTION / SETTING / TIME FRAME |
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| (Aicinena, 2011) | To present examples of hubristic behaviour and the harm that it causes in sport. | Theoretical, hermeneutic | N/A | United States of America | N/A |
| (Chinkov & Holt, 2016) | To explore the transfer of life skills among adults who participated in Brazilian jiu-jitsu. | Qualitative Descriptive | N = 16 adults<br>Sport: Brazilian jiu-jitsu<br><br>n coaches = 2<br>100% male<br>Rage = 27-30<br>Level (belt): brown (1); black (1).<br><br>n athletes = 14<br>28,6% female; 71,4% male<br>Rage = 19-54; Mage = 34.6; SD = 10.7<br>Level (belt): white (4); blue (4); purple (2); brown (1); black (1). | Canada | N/A |
| (Denison et al., 2017) | To explore how can athlete empowerment initiatives be anything more than rhetoric within a disciplinary | Sociological analysis | N/A | Canada | N/A |

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| | framework that normalizes maximum coach control. | | | | |
| (Dumčienė et al., 2015) | To investigate the effects of regular fitness classes on women's satisfaction with their bodies and their sense of coherence. | Quantitative Longitudinal | N = 79<br>100% female<br>Mage = 34.6 ± 3.76 | Lithuania | * Fitness classes twice a week in 2013–2014, and not less than half a year group fitness classes<br>* Not reported<br>* 6 months |
| (Gearity & Metzger, 2017) | To begin to map an understanding of the intersection of sport coaching, mental health, and social identities. To achieve this aim, we weave together scholarship on microaggressions and the sociology of sport and sport coaching with our stories and interpretations. | Qualitative Post-structural creative analytic | N/A. Three short stories of microaggressions in men's sport coaching and their plausible negative effects on mental health. | United States of America | N/A |
| (Gearity & Murray, 2011) | To describe the psychological effects of poor coaching reported by collegiate, professional and semi-professional athletes. | Qualitative Existential phenomenology | N = 16 current or former athletes<br>31,2% female; 68,8% male<br>Age: not reported<br>Sport: Baseball, basketball, football, soccer and softball<br>Level: minor leagues (n=2); NFL (n=1); NCAA D.I (n=13) | United States of America | N/A |

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| (Hillier et al., 2019) | To investigate the prevalence, magnitude, methods, and influencers of the practice of rapid weight loss (RWL) in professional and amateur mixed martial arts (MMA) athletes. | Quantitative Cross-sectional | N (for data relating to the method of weight loss and key influencers) = 314 athletes<br>8,6% female; 91,4% male<br>Rage = over 18<br><br>N (for data relating to weight loss magnitude) = 290<br>9% female; 91% male<br><br>Sport: mixed martial arts (MMA) | United Kingdom | N/A |
| (Hõs, 2005) | To seek answers of the effects of guided, "age-needs specific," systematic, group aerobic exercise programmes on the self-esteem and self-image of middle-aged women. | Quantitative Quasi-experimental | N = 53<br>100% female<br>Mage = 48.6; SD = 5.1<br><br>n IG = 25<br>Mage = 48.9; SD = 5.6<br><br>n CG = 28<br>Mage = 48.3; SD = 5.2 | Hungary | * IG --> Professionally guided, age-needs-specific, systematic group aerobic dance exercise programme (low-impact exercises). + CG --> No programme<br>* One hour-long, three times a week for one year. |

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| (Huberty et al., 2008) | To qualitatively examine factors related to physical activity adherence to understand why women continue to participate in long-term exercise after completing a structured exercise program. | Qualitative | n = 19 sedentary faculty and staff at the University of Utah (UTAHFIT participants who attended all of the focus groups)<br>100% female<br>Rage = 26-66 years | USA | * UTAHFIT (U Try Active Habits and Fitness), a PA behaviour change programme.<br>* University of Utah<br>* 12 weeks |
| (Mickelsson, 2020) | To explore how the currently underexplored martial art disciplines may contribute to sociopsychological development among young people. In addition, it was investigated whether individuals who are predisposed to different traits may favour one sport over the other. | Quantitative Longitudinal | N = 145<br>125 males, 20 females<br>Rage = 15-24; Mage = 20.23; SD = 2.43<br>Sport: local martial arts<br><br>n MMA group = 79<br>n BJJ group = 66 | Sweden | Training Mixed Martial Arts (MMA) or Brazilian Jiu-Jitsu (BJJ)<br>5 months |
| (Soulliard et al., 2019) | (1) To examine differences in positive body image, specifically body appreciation and functionality appreciation, between student athletes and non-athletes. (2) To examine the | Quantitative Cross-sectional | N = 254 undergraduate students from a NCAA Division I private university:<br><br>n student athletes = 79<br>67,1% female; 32,9% male<br>Rage = + 18; Mage = 19.79; SD = 1.13 | United States of America | N/A |

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| | relationships between positive body image and other sport-related variables | | Sports: baseball (n = 8), basketball (n = 2), cheerleading/dance (n = 7), cross country/track and field (n = 24), field hockey (n = 3), soccer (n = 10), softball (n = 6), swimming/diving (n = 11), tennis (n = 5), and volleyball (n = 3).<br><br>n non-athletes = 175<br>72,6% female; 26,9% male<br>Rage = + 18; Mage = 19.38; SD = 1.81 | | |
| (Stefansen et al., 2019) | To explore young athletes' thinking about coach-athlete sexual relationships (CASRs). Our aim is to further the understanding of the ambivalence surrounding CASRs in the sports field, which are simultaneously viewed as ethically problematic and acceptable—at least when they involve high-profile adult athletes. Inspired by Swidler's toolkit approach to culture, we analyse how athletes understand and justify CASRs. | Qualitative | N = 106 sport students<br>gender mixed (no numbers reported)<br>Rage = 19–26 | Norway | N/A |

# APPENDIX 4: Categories, instruments and key findings within the cluster "Awareness and mental literacy"

**Table 12: Categories, instruments and findings. Cluster: Awareness and mental literacy**

| REFERENCE | CATEGORIES ANALISED AND MEASUREMENT INSTRUMENTS | KEY FINDINGS REPORTED |
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| (Anderson & Pierce, 2012) | * ***Pre-training and 6 months post-training questionnaire***: **Ability to recognise depression and schizophrenia from a brief clinical scenario**, **knowledge of treatment options**, and both **attitudes and confidence to respond to mental health difficulties in others:** * **Participants' experience of mental health literacy training, their knowledge and attitudes towards mental health issues** and **the overall impact of the training upon their club**: ***Focus group interviews*** * ***self-completed questionnaire:*** **Measures of football club players' attitudes to depression and treatment options** | Limited findings from phase I have been previously reported (Pierce et al., 2010). Additional findings from phase II and findings of combined phase I and II data are now reported. Participants reported increased knowledge of key mental health conditions, increased confidence to help others experiencing mental ill health and less stigmatizing attitudes toward mental ill health. Limited evidence was noted to support the assumption that, following training, individuals will help others experiencing mental ill health. Difficulties in determining if transfer of benefit to others has occurred following mental health literacy training are discussed, along with a number of mechanisms that, if included in training, may extend the benefit of that mental health literacy training to others. |
| (Bapat et al., 2009) | * **Mental health literacy**: pre and post ***questionnaires*** - Personal experience of mental disorder - Confidence to help someone with mental disorder | The course led to significant improvement in knowledge about mental disorders, increased confidence in helping someone with a mental disorder and more positive attitudes towards people with mental disorders. Conclusions: Training |

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| | - Knowledge about mental disorder<br>- Change in attitudes toward mental disorder " | programs delivered within sporting settings may be effective in improving mental health literacy. Future evaluations would benefit from assessing whether these changes are sustained over time and whether trainees subsequently assist young club members to seek appropriate professional help. |
| (Boardley et al., 2008) | * Athletes' perceptions of **Coaching Effectiveness**: ***adapted version of the Coaching Efficacy Scale (CES***; Feltz et al., 1999): four subscales measuring **motivation**, **game strategy**, **technique**, and **character-building efficacy**.<br>* Players' **effort**: ***modified version of the effort subscale of the Intrinsic Motivation Inventory*** (Ryan, 1982).<br>* **Sport Commitment**: ***four items that assess the psychological desire and resolve to continue sport participation (Scanlan, Carpenter et al., 1993)***.<br>* Players' **enjoyment with regard to playing rugby**: ***adapted from Scanlan, Carpenter et al. (1993) to be rugby-specific***.<br>* **Task Self-Efficacy**. A ***rugby self-efficacy scale was developed*** based on guidelines by Bandura (2001).<br>* **Prosocial and Antisocial Behaviour** in rugby: ***10-item measure adapted for the sport of rugby from a questionnaire originally developed for soccer (Sage et al., 2006)***. | Regression analyses, controlling for rugby experience, revealed that athletes' perceptions of motivation effectiveness predicted effort, commitment, and enjoyment. Further, perceptions of technique effectiveness predicted self-efficacy, while perceptions of character-building effectiveness predicted prosocial behaviour. None of the perceived coaching effectiveness dimensions were related to antisocial behaviour. In conclusion, athletes' evaluations of their coach's ability to motivate, provide instruction, and instil an attitude of fair play in his athletes have important implications for the variables measured in this study. |
| (Breslin, Haughey, et al., 2017) | * **Mental health stigma-related behaviour** (***Reported and Intended Behaviour Scale (RIBS)***; Evans-Lacko et al., 2011)<br>* **Mental health knowledge** (a ***self-report level of mental*** | A mixed analysis of variance showed a significant interaction effect wherein there were improvements in mental health knowledge and intentions to offer |

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| | ***health knowledge single five-point ordinal response question***, a ***mental health-related testing knowledge question*** and the ***Mental Health Knowledge Schedule (MAKS) questionnaire***: Evans-Lacko et al., 2010)<br>* **Confidence in ability to help someone with a mental health problem** (a ***single five-point ordinal response question***).<br><br>The questionnaires were based on questions previously used by Northern Ireland's Public Health Agency's evaluation of Mental Health First Aid (2006); and a general public mental health literacy-training programme also conducted in Northern Ireland.<br><br>Post-programme ***focus groups*** were conducted too. | support compared to the control group. Focus group findings provided further detail on how to support mental health awareness in sport clubs. Practical implications: Knowledge and intentions to offer support can be enhanced through a short mental health awareness programme. The already established social networks available in sport clubs can provide a natural environment for delivering mental health awareness programmes. The programme facilitated discussion on mental health issues and highlighted that future programmes should contain more sport-related examples (i.e. case studies, videos, etc.). Originality/value: This is the first study to apply the Theory of Planned Behaviour to mental health awareness programmes in a sport setting. |
| (Breslin, Shannon, et al., 2017a) | *** Effect of sport-specific mental health awareness programs** to improve mental health knowledge and help-seeking among sports coaches, athletes and officials | A range of outcomes was used to assess indices of mental health awareness and well-being. Mental health referral efficacy was improved in six studies, while three reported an increase in knowledge about mental health disorders. However, seven studies did not report effect sizes for their outcomes, limiting clinically meaningful interpretations. Furthermore, there was substantial heterogeneity and limited validity in the outcome measures of |

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| | | mental health knowledge and referral efficacy. Seven studies demonstrated a high risk of bias. |
| (Halterman et al., 2020) | * **Barriers to SP/SPC usage**: lack of knowledge, misperceptions and lack of availability.<br>* **Attitudes, knowledge of SP and SPCs**: SP/SPCs seen as tools; mental training as essential; coaches reducing stigma; SPCs unique role.<br>* **Ideal SP program**: availability; provide value; football tailored interventions<br>* **Ideal SPC**: traits; specific football knowledge and experience; being on the same page.<br>* **Mental health concerns**: taking an active approach to mental health; coaches assess student-athletes first; coaches' willingness to refer. | Coaches revealed their beliefs about mental health concerns, barriers to accessing mental health services, as well as their perspective of the ideal characteristics of Sport Psychology Consultants (SPC), as it relates to the specific needs of college football players. Results can be used to inform best practices and provide practical implications for improving mental health and overall well-being among college student-athletes. |
| (Kroshus et al., 2019) | * **Perceived mental health literacy**: ***items developed specifically for this study, conceptualized as an index rather than a latent construct.*** Thus, coaches were asked to ***subjectively assess their mental health literacy in three domains*** by responding to the following prompt: (how strong coaches agree or disagree):<br>(a) I would be able to tell if a student-athlete were experiencing a mental health problem;<br>(b) I would know what do to if I thought a student-athlete were experiencing a mental health problem;<br>(c) I would be able to do what was needed to help a student-athlete experiencing a mental health problem." (More in text...)<br>* **Stigma about mental health help seeking and sport** | Module completion was associated with increased mental health literacy, decreased stigma about help seeking and increased intentions to engage in culture setting communication. These findings suggest that the online module is a good start for coach education about mental health; however, additional modifications may be warranted to the extent coach referral to sports medicine staff or provision of emotional support to student-athletes struggling with mental health concerns are considered desired behaviours. |

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| | **performance**: An ***initial pool of items encompassing potential sport-relevant outcomes of mental health care seeking were generated*** from a review of literature about stigma related to mental health help seeking in the sport context (Gulliver et al., 2012; Jones, 2016; Putukian, 2016; Van Raalte et al., 2015; Wahto et al., 2016; Watson, 2005), ***Supplementary File 3 (available online)***.<br>* **Intentions about culture setting communication:** ***Coaches responded to a specific prompt***: …<br>* **Intentions about responding to concerns**: **Coaches responded to the a specific prompt**: …<br>* **Attitudes about own mental health help seeking**: Based on coach feedback about the ***repetitiveness of the Attitudes Towards Seeking Professional Psychological Help scale (Fischer & Farina, 1995)***, and a desire to create a lower burden measure, a shortened version of this scale was generated from the results of the pilot test. (more in text)<br>* **Demographic characteristics**<br>* **Perceptions about the educational program** | |
| (Langan et al., 2013a) | *** Attrition**<br>*** Fear of failure**<br>*** Goal orientation**<br>*** Anxiety**<br>*** Self-esteem**<br>*** Effectiveness of coach education on athletes' behaviour, cognition, and affect.**<br>*** Motivational climate.** | Overall, education interventions based on coach effectiveness training and achievement goal theory produced mixed effects on a variety of athlete outcomes, such as anxiety, self-esteem, fear of failure, and motivational orientation.<br>Conclusions: Due to the diversity in athlete outcomes and intervention design, it is difficult to draw firm conclusions around the effectiveness of coach |

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| | *** Perception of coach behaviour.**<br>*** Academic goal orientations at the end of the season.**<br>***Systematic review*** of published empirical research. | education interventions. The small number of identified interventions highlights the current paucity of empirical data on coach education intervention effectiveness. More research is needed to further our understanding of intervention effectiveness to allow for growth and improvement in coach education. Furthermore, theory-based, rather than "theory inspired" coach education interventions are required. |
| (Liddle et al., 2017) | N/A | Findings revealed many of the sport organizations reviewed acknowledged the importance of mental components of their sport to increase competitiveness, but few explicitly noted mental health problems or the potential of their sport to promote good mental health. Although some had participated in mental health promotion campaigns, there was no evaluation or reference to the evidence base for these campaigns. Conclusions We describe a framework for integrating mental health promotion into sports organizations based on the MindMatters programme for schools. |
| (Pierce et al., 2010) | * Football club leaders trained in MHFA:<br>**- ability to recognise depression and schizophrenia from a clinical scenario, knowledge of evidence supported treatment options, and attitudes including confidence in** | Club leaders (n = 36) who were trained in MHFA and club players (n = 275) who were not trained, participated in this evaluation. More than 50% of club leaders who undertook the training showed |

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| | **responding to mental health difficulties**: ***self-completed questionnaire that had been used in previous MHFA research*** - ***Focus group interviews:*** their **experience of the training, its impact within their club and their experience in responding to mental health difficulties**.<br><br>* Football club players: **attitudes to depression and treatment options, and ability to recognise depression from a clinical scenario**: ***self-completed customised questionnaire***<br>* Other assessment approaches:<br>- ***Individual interviews of key project stakeholders***<br>- ***Field observations*** were undertaken throughout the project. | increased capacity to recognise mental illness and 66% reported increased confidence to respond to mental health difficulties in others. They reported that this training built upon their existing skills, fulfilled their perceived social responsibilities and empowered them. Indirect benefit to club players from this approach seemed limited as minimal changes in attitudes were reported by players. Key stakeholders regarded the project as valuable. **Conclusions**: Rural football clubs appear to be appropriate social structures to promote rural mental health awareness. Club leaders, including many coaches, benefit from MHFA training, reporting increased skills and confidence. Benefit to club players from this approach was less obvious. However, the generally positive findings of this study suggest further research in this area is desirable. |

# APPENDIX 5: Categories, instruments and key findings within the cluster "Coach-athlete relationship"

**Table 13: Categories, instruments and findings. Cluster: Coach-athlete relationship**

| REFERENCE | CATEGORIES ANALISED AND MEASUREMENT INSTRUMENTS | KEY FINDINGS REPORTED |
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| (Braun & Tamminen, 2019) | * What **Interpersonal Emotion Regulation (IER) strategies do coaches use to try and regulate the emotions of their athletes**?<br>* **How does the coach-athlete relationship influence IER among coaches and athletes**?<br>* **What contextual features influence IER among coaches and athletes**?<br><br>***individual interviews*** + ***audio diary*** period | Participants described a bidirectional association between the coach-athlete relationship and coaches' IER. A number of factors influenced athletes' and coaches' use of emotion regulation strategies and contributed to the quality of the coach-athlete relationship. The IER strategies that coaches used may reflect instrumental, performance-related motives, and coaches' IER efforts may also contribute to coaches' emotional labour |
| (Davis & Jowett, 2014) | ***Questionnaire*** measuring:<br><br>*** Athletes' attachment styles with the coach**<br>*** Athletes' relationship quality with the coach**<br>*** Athletes' feelings of positive affect (PA) and negative affect (NA).** | Structural equation modelling (SEM) analysis found athletes' avoidant and secure attachment styles to be associated with aspects of coach-athlete relationship quality such as social support, relationship depth, and interpersonal conflict. Interpersonal conflict appeared to play a key role in athletes' PA and NA. From a practical perspective, an understanding of conflict management could provide a resource that allows athletes (and coaches) to enhance the quality of their sporting relationships. Specifically, an awareness of proactive strategies (e.g., steps to clarify expectations) and reactive strategies (e.g., |

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| | | cooperation during the discussion of disagreements) could potentially lead both coaches and athletes to "broaden" their viewpoints and in turn "build" connections that are capable of generating positive emotions including interest, excitement, happiness, and zeal. |
| (Dorgo et al., 2009) | **overall functioning** defined as **perceived physical, mental, and social function**: ***SF-36vr2***: two summary scores and scores for eight individual scales:<br>- **physical component summary or PCS**. PCS is a composite of:<br>***physical functioning (PF)**<br>***role physical (RP)**<br>***bodily pain (BP)**<br>***general health (GH)**<br>- **mental component summary or MCS**. MCS includes:<br>***vitality (VT)**<br>***social functioning (SF)**<br>***role emotional (RE)**<br>***mental health (MH)** | After a 14-week physical fitness intervention, perceived physical, mental, and social functioning improved significantly ($p < .05$) for the PM group, but not for the SM group ($p > .06$). Thus, older adults who participated in a physical fitness program with peer support perceived (a) overall improvement in physical and mental well-being; (b) better social functioning, (c) enhanced ability to carry out physical and emotional roles, (d) improved general health, and (e) increased level of vitality. Thus, we conclude that peer-mentored exercise programs for older adults are superior to programs mentored by young professionals and may lead to increased adherence. Implications for practice: Nurse practitioners routinely prescribe exercise while educating older adults about the benefits of an active lifestyle; however, older adults often remain sedentary and exhibit poor adherence to exercise. One potential solution is to use peer support. Two factors that can improve adherence are availability of structured |

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| | | exercise programs for the older adult and peer mentoring. |
| (Felton & Jowett, 2013a) | * ***Experiences in Close Relationships Scale e Short version (ECR-S***; Wei, Russell, Mallinckrodt, & Vogel, 2007): **athlete's attachment style** by assessing **how they generally experience close relationships**.<br>* ***Need Satisfaction Scale (NSS***; La Guardia et al., 2000): the **degree to which the basic psychological needs of the athlete were satisfied within the coach-athlete relational context and the parent-athlete relational context**.<br>* ***Subjective Vitality Scale (SVS***; Ryan & Frederick., 1997). The SVS is a 7-item measure that assesses **perceptions of mental and physical aliveness and energy** in general terms.<br>* ***Rosenberg Self-Esteem Scale (RSE***; Rosenberg., 1965). The RSE scale is a 10-item measure that assesses **individual's perception relative to how they regard themselves**.<br>* ***Elite Athlete Self Description Questionnaire (EASDQ***; Marsh, Hey, Johnson, & Perry, 1997): athletes' perceptions of their physical self-concept across five dimensions; skill ability, body shape, physiological state, mental competence, and overall performance. For the purpose of this study only the sub-scales of skill ability and overall performance self-concept were employed.<br>* ***The International Positive and Negative Affect Schedule - Short Form (I-PANAS-SF***; Thompson, 2007). This scale was | Bootstrap mediation analysis revealed that athletes' perceptions of satisfaction of basic psychological needs generally mediated the association between their attachment styles and well-being. Moreover, the indirect effect of athletes' experience of the satisfaction of basic needs on well-being was greater within the parental relational context than within the coaching relational context. Conclusions: Overall, the findings from the study highlight that the integration of attachment and self-determination theories can promote understanding of relational process in sport. |

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| | employed to assess the level of positive and negative affect experienced by the athletes. | |
| (Felton & Jowett, 2013b) | * ***Coach–Athlete Relationship Questionnaire (CART-Q***; Jowett & Ntoumanis, 2004): **perceptions of the coach–athlete relationship quality**; athletes' direct perceptions of: **closeness, commitment** and **complementarity.**<br>* ***Sport Climate Questionnaire (SCQ***; Reinboth et al., 2004): **degree to which a coach is autonomy supportive**.<br>* ***Coaches' Controlling Behavior Scale (CCBS***; Bartholomew et al., 2010): **athletes' perceptions of their coaches controlling behavior**<br>* ***Need Satisfaction Scale (NSS***; La Guardia et al., 2000): **satisfaction of the three basic needs** (**autonomy, competence, and relatedness**).<br>* ***Subjective Vitality Scale (SVS***; Ryan & Frederick, 1997): **perceptions of mental and physical aliveness and energy** in general terms.<br>* ***Elite Athlete Self-Description Questionnaire (EASDQ***; Marsh et al., 1997): **athletes' perceptions of physical self-concept** across five dimensions: **skill ability, body shape, physiological state, mental competence,** and **overall performance**.<br>* *Only* ***five negative affect items from*** The ***International Positive and Negative Affect Schedule –Short Form (I-PANAS-SF***; Thompson, 2007): **level of positive and negative affect experienced** by the individuals: **athletes' level of ill-being**. | Bootstrap mediation analysis highlighted significant indirect effects whereby the competence need mediated associations between the social environment of coaching and athletes' vitality, negative affect, and physical self-concept (defined as skilfulness and performance). Findings support theoretical assumptions and highlight that athletes' perceptions of what coaches do, and how they relate, are important to their psychological needs satisfaction and optimal functioning. |

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| (Felton & Jowett, 2015) | * ***Psychological Need Thwarting Scale (PNTS)*** (Bartholomew et al., 2011b)**, within the coaching relational and sport contexts**.<br>* ***Coach–Athlete Attachment Scale (CAAS)***: it measures an **athlete's avoidant**, **anxious**, and **secure attachment**.<br>* ***Satisfaction with Life Scale (SLS)***<br>* ***Athlete Satisfaction Questionnaire (ASQ)*** (Riemer & Chelladurai, 1998): The **degree of performance satisfaction perceived by the athletes**.<br>* ***Depression subscale of the Brief Symptom Inventory (BSI)*** (Derogatis & Melisaratos, 1983): **Depression**<br>* ***negative affect subscale of the International Positive and Negative Affect Scale-Short Form (I-PANAS-SF)*** (Thompson, 2007). The **athletes' experience of negative affect**. | Bootstrap mediation analysis revealed that the perceived psychological needs of thwarted autonomy and competence within the coach relational context mediated the associations between athletes' perceptions of insecure attachments to the coach and experiences of life satisfaction and negative affect. Analysis also revealed that the perceived psychological needs of thwarted competence and relatedness within the sport context mediated the associations between athletes' attachment style and experiences of performance satisfaction, life satisfaction, depression, and negative affect. Overall, the findings of the study highlight that the examination of negative aspects of sport participation may facilitate a more complete understanding of athletes' psychological functioning. |
| (Felton et al., 2020) | * The ***Complementarity dimension of the Coach-Athlete Relationship Questionnaire (CART-Q***; Jowett, 2009; Jowett & Ntoumanis, 2004): **athletes' interpersonal behaviours**. Both **athletes' direct perspective of corresponding complementarity,** and **athletes' meta-perspective of corresponding complementarity** were assessed.<br>* The ***Basic Need Satisfaction in Relationships Questionnaire (BNSRQ***; La Guardia, Ryan, Couchman, & Deci, 2000): the **extent athletes' basic psychological needs were satisfied within the context of the coach-athlete** | In **Study 1** (n = 106), mediation analysis demonstrated significant indirect effects between direct- and meta complementarity and vitality via basic psychological needs satisfaction. In addition, a significant direct effect between direct complementarity and vitality was also seen, independent of the indirect effect.<br>In **Study 2** (n = 198), mediation analysis demonstrated significant indirect effects between direct- and meta complementarity and task and |

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| | **relationship**.<br>* ***Subjective Vitality Scale (SVS***; Ryan and Frederick, 1997): **athletes' mental and physical vitality** | social cohesion via the basic psychological needs. A significant direct effect between meta complementarity and task cohesion was also identified, independent of the indirect effects. No direct or indirect effects were observed for reciprocal complementarity. Findings highlight the importance of complementarity, and satisfaction of the basic psychological needs, within the coach-athlete relationship for enhancing athletes' feelings of well-being and cohesion. |
| (Katagami & Tsuchiya, 2017) | * ***Japanese version of the Athlete Received Support Questionnaire (ARSQ-J***: Katagami and Tsuchiya, 2015): **received support experienced by university student athletes** respectively from coaches and teammates and **its relationship with self-confidence and feelings of adaptation**.<br>* ***Competitive State Anxiety Inventory-2 (the CSAI-2R***: Cox et al., 2003): **self-confidence in a sports context**<br>* **Feelings of adaptation**: a ***self-esteem scale (Yamamoto et al., 1982)***. Self-esteem is considered as an indicator of an individual's feelings of adaptation to the current situation | The results indicated that received support might influence recipients' self-confidence both positively and negatively, depending on its dimensions and providers. Esteem support both from coaches and teammates were effective for self-confidence. Tangible support had a positive impact if provided from teammates, but a negative impact if provided by coaches. With regard to the feelings of adaptation, it was indicated that tangible support both from coaches and teammates were negatively correlated with the outcome. In conclusion, its dimension and provider of support can determine the effectiveness of social support. Further clarification of received support in a sport context by examining its dimensions, providers and contexts will contribute to the identification of effective support, which may be useful in supporting athletes |

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| (Koh et al., 2019) | * University coaches' **implementation strategies in providing social support** to their athletes: ***Interviews***. | The results revealed that coaches from different sports shared similar strategies across emotional, esteem, informational and tangible dimensions, but with some distinguishable differences in the way these strategies were implemented. In documenting the lived experiences of sport coaches, key strategies valued highly among these coaches were highlighted, providing important implications for coaches to know how to incorporate these strategies into their coaching practice to better support athletes' well-being and improve the quality of coaching. The findings also provide an implementation framework of social support that emphasizes key strategies for coaches to focus on in their coaching approaches. |

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| (Lafrenière et al., 2011) | * **Coaches' harmonious and obsessive passion for coaching**: ***adapted version of the Passion Scale*** (Vallerand et al., 2003),<br>* **Coaches' autonomy-supportive behaviors toward their athletes**. ***¿…?***<br>* **Coaches' controlling behaviors toward their athlete**. ***¿…?***<br>* **Athletes' perceptions of the quality of the relationship with their coach (closeness, commitment, and complementarity** corresponding to the **affective, cognitive, and behavioural aspects of the coach-athlete relationship**, respectively): ***CART-Q***<br>* **Athletes' happiness** (**in terms of positive affect)**. The ***positive affect subscale*** of the ***short Positive and Negative Affect Schedule (PANAS***; Mackinnon et al., 1999; Watson, Clark, & Tellegen, 1988) | Results from structural equation modelling revealed that harmonious passion for coaching positively predicted autonomy-supportive behaviours toward their athletes, while obsessive passion for coaching positively predicted controlling behaviours. Moreover, autonomy-supportive behaviours predicted high quality coach–athlete relationships as perceived by athletes that, in turn, positively predicted athletes' general happiness. Conclusions: This study provides insights into the psychological factors that allow coaches to instigate high quality relationships with their athletes and the impact of the relationship on athletes' general happiness. Future research directions are discussed in light of the Dualistic Model of Passion and the coach–athlete relationship. |
| (Lafrenière et al., 2008) | * **Athletes' harmonious and obsessive passion toward sport:** ***Passion Scale (Vallerand et al., 2003) (Study 1 & 2)***<br>* The ***Coach-Athlete Relationship Questionnaire (CART-Q***; Jowett & Ntoumanis, 2004) ***(Study 1)***:<br>- the **athletes' direct perspective of the quality of the relationship with their coach**.<br>- the meta-perspective of the quality of the relationship with their coach: **how athletes believe their coach perceives their relationship**.<br>* The ***Interpersonal Relationship Quality Scale*** (Senécal, Vallerand, & Vallières, 1992) ***(Study 2)***: **quality of the** | Results of **Study 1**, conducted with **athletes** (N = 157), revealed that HP positively predicts a high-quality coach-athlete relationship, whereas OP was largely unrelated to such relationships. **Study 2** was conducted with **coaches** (N = 106) and showed that only HP positively predicted the quality of the coach-athlete relationship. Furthermore, these effects were fully mediated by positive emotions. Finally, the quality of the coach-athlete relationship positively predicted coaches' subjective well-being. Future |

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| | **coach–athlete relationship**.<br>* **Coaches' situational positive emotions** ***(Study 2): three items*** assessing positive emotions taken from ***Barrett and Russell (1998)***.<br>* **Satisfaction With Life** ***(Study 2): four items*** from the ***Satisfaction with Life Scale*** (Blais, Vallerand, Pelletier, & Brière, 1989).<br>* Coaches' **General Positive and Negative Affect** generally experienced in life ***(Study 2)***: ***short PANAS scales*** (Watson, Clark, & Tellegen, 1988). | research directions are discussed in light of the dualistic model of passion |
| (Lu et al., 2016) | * **Life stress**: ***24-item College Student-Athlete Life Stress Scale (CSALSS***; Lu, Hsu, Chan, Cheen, & Kao, 2012). eight subscales for **general life stressors** (academic requirements, family relationships, interpersonal relationships, romantic relationships) and **sport life stressors** (coach relationships, performance demand, sports injury, training adaptation).<br>* Individuals' **resilience** as a personality trait: ***abbreviated version of the Connor-Davidson Resilience Scale e 2 (CD-RISC2***; Vaishnavi, Connor, & Davidson, 2007), taken from the original CDeRISC (Connor & Davidson, 2003).<br>* ***Athletes' Received Support Questionnaire (ARSQ***; Freeman, Coffee, Moll, Rees, &Sammy, 2014): four types of **social support that athletes received (**slightly modified to measure coaches' social support**)**: **emotional support**, **esteem support**, **informational support**, and **tangible support**. | Resilience and coaches' social support conjunctively moderated the stress-burnout relationship. Specifically the interaction of athletes' resilience with coaches' informational and tangible social support moderated athletes' stress-burnout relationship in high and low life stress conditions. Conclusions We suggest coaches provide useful social support and foster athletes' resilience to prevent stress-induced burnout in athletes. |

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| | * Athletes' **burnout** symptoms**:** ***Athlete Burnout Questionnaire (ABQ***; Raedeke & Smith, 2001): three subscales: emotional or physical exhaustion, reduced sense of accomplishment, and sport devaluation. | |
| (Moen et al., 2019) | Norwegian version of all scales:<br>* ***The Working Alliance Inventory (WAI***; Horvath & Greenberg, 1989; Tracey & Kokotovic, 1989) adjusted for the sport context: **coach– athlete relationship characteristics**. Three central dimensions: (a) **agreement on the goals**; (b) **agreement on**; and (c) the **development of a personal bond** between the coach and the athlete.<br>* ***The Resilience scale for adults (RSA)***: six **protective dimensions of resilience in adults**: (1) Perception of the Self, (2) Planned Future, (3) Social Competence, (4) Family Cohesion, (5) Social Resources, (6) Structured Style (Friborg & Hjemdal, 2004; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003; Hjemdal, Friborg, Martinussen, & Rosenvinge, 2001).<br>* ***The Athlete Burnout Questionnaire*** (***ABQ***; Raedeke & Smith, 2001, 2009): **athlete burnout**: three key dimensions of burnout: (1) devaluation of sports participation, (2) a reduced sense of accomplishment, and (3) emotional and physical exhaustion. | Structural equation modelling analyses showed a strong positive association between the coach-athlete working alliance and resilience, and a strong negative association between resilience and burnout. A moderate association was found between the coach-athlete working alliance athlete burnout. Furthermore, a mediational relationship was detected, where the effect of working alliance on less burnout partly was explained by an indirect effect of working alliance through more resilience in the athlete. The current study highlights the importance of a strong working alliance between coaches and athletes to develop athlete resilience, and the importance of athlete resilience as a buffer to prevent occurences of athlete burnout. |

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| (Nicholls & Perry, 2016) | * ***Coach and athlete version of the Dyadic Coping Inventory (DCI***; Levesque et al., 2014): **positive and negative dyadic coping**.<br>* The ***Coach Athlete Relationship Questionnaire (CART-Q***; Jowett and Ntoumanis, 2004): **athletes' and coaches overall perceptions of relationship quality**: **closeness, commitment, and complementarity**.<br>* **Primary Stress Appraisals**: ***four challenge*** and ***four threat questions*** from the ***Stress Appraisal Measure (SAM***; Peacock and Wong, 1990). | These actor-partner analyses revealed differences between athletes and coaches. Although the actor effects were relatively large compared to partner effects, perceptions of relationship quality demonstrated little impact on athletes. The mediating role of relationship quality was broadly as important as dyadic coping for coaches. These findings provide an insight in to how coach-athlete dyads interact to manage stress and indicate that relationship quality is of particular importance for coaches, but less important for athletes. In order to improve perceptions of relationship quality among coaches and athletes, interventions could be developed to foster positive dyadic coping among both coaches and athletes, which may also impact upon stress appraisals of challenge and threat. |
| (Nicholls, Levy, Jones, et al., 2016) | * **Athletes' perceptions of coach behaviour**: ***47-item CBS11***<br>* **Coach–athlete relationship**: ***11-item Coach Athlete Relationship Questionnaire (CART-Q)***: **athletes' perceptions of closeness**, **commitment** and **complementarity with their coach**.<br>* ***Stress Appraisal Measure (SAM):*** **three primary appraisals (i.e. challenge, threat, and centrality), three secondary appraisals (controllable-by-self, controllable-by-others, and uncontrollable-by-anyone), and stressfulness (i.e. overall feeling of stress).** | Our results revealed that perceptions of coach behaviour were associated with aspects of the coach-athlete relationship and stress appraisals. In particular, closeness was positively associated with challenge appraisals and negatively with threat appraisals. However, commitment was positively associated with threat, indicating that there might be some negative implications of having a highly committed coach--athlete relationship. Further, commitment was also positively associated with disengagement-oriented coping, which has |

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| | * ***Coping Inventory for Competitive Sport (CICS):*** **how the athletes were coping before their competition**. | previously been linked to poor performance and lower goal-attainment. Applied practitioners could monitor athlete's perceptions of the coach--athlete relationship, particularly commitment levels, and provide training in appraising stress and coping to those who also score highly on threat and disengagement-oriented coping, but low on task-oriented coping. |
| (Sagar & Jowett, 2015) | * **Fear of failure (beliefs associated with aversive consequences of failure)**: ***Performance Failure Appraisal Inventory - PFAI*** (Conroy et al., 2002): five subscales capturing **fear of experiencing shame and embarrassment**, **fear of having an uncertain future**, **fear of devaluing one's self-estimate**, **fear of important others losing interest**, and **fear of upsetting important others**<br>* **Trait self-control**: ***13-item Brief Self-Control Scale (Tangney et al., 2004)***: **spheres of self-control that relate to control over thoughts and emotions**, **impulse control**, **performance regulation**, **and habit breaking**.<br>* **Coach-athlete relationship quality**: ***Coach-Athlete Relationship Questionnaire (CART-Q***; Jowett & Ntoumanis, 2004): **athletes' perceptions of closeness**, **commitment**, **and complementarity with their coach.**<br>* **Athletes' perception of coach empathy**: ***eight positively worded items from the empathy subscale of the Relationship Inventory*** (Barrett-Lennard, 1962; e.g.). | Multiple regression analyses revealed that self-control and empathy predicted both interpersonal and intrapersonal dimensions of fear of failure, whereas relationship quality predicted only interpersonal dimensions of fear of failure. Self-control acted as a beneficial regulatory strategy to diffuse intra- and inter-personal types of fear of failure. Self-control, empathy and relationship quality appear to be likely predictors or antecedents of fear of failure. Thus, it would seem that the development of quality relationships characterised by affective closeness, commitment, complementary transactions and empathy, as well as the possession of self-control are key factors in reducing fear of failure among individuals. |

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| (Staff et al., 2017) | * **Dyadic coping in coach-athlete relationships**:<br>- **Essence of dyadic copin**g: coaches' and athletes' understanding of dyadic coping<br>- **Antecedents of dyadic coping**: the factors that were necessary for dyadic coping to occur: lock and key fit, friendship and trust, communication of the stressor<br>- **Outcomes of dyadic coping**: protection and support: the positive nurturing environment<br>***individual interviews*** | Five themes were identified. These represented the essence of dyadic coping (theme: the essence of dyadic coping), antecedents of dyadic coping (themes: lock and key fit, friendship and trust, communication of the stressor), and outcomes of dyadic coping (theme: protection and support). The first theme captures coaches' and athletes' understanding of dyadic coping. The antecedent themes represent the factors that were necessary for dyadic coping to occur. Protection and support relates to the positive nurturing environment that was discussed as an outcome of dyadic coping. Conclusion The results extend published research by exploring antecedents and outcomes of dyadic coping in sport. The findings highlight that dyadic coping was prevalent in coach-athlete relationships when various antecedents (lock and key fit, friendship and trust, communication of the stressor) existed. Protection and support were pertinent outcomes of dyadic coping that contributed to personal and relationship growth. |
| (Trouilloud & Amiel, 2011) | * **Reflected appraisals of coaches, parents and teammates**. Athletes' perceptions of significant others' beliefs were assessed distinctly for coaches, parents and teammates: ***12-item scale adapted from Amorose's scale (2003)***: | A survey of young adult athletes finds that not only did a positive perception of reflected appraisals affect athletes' self-evaluation of their own competence, but also positively affected their belief in future progress in their sport. |

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| | - **Reflected appraisals about athletes' competence** and about **athletes' capacity to make progress in the future**.<br>- **Athletes' self-perceptions of** sport **competence and future progress**.<br>- **Background characteristics**: ***socio-demographic items*** | |
| (van Kleef et al., 2019) | **Effects of coaches' emotional expressions on players' affect, cognition, and behaviour:**<br>*** Effects of coaches' emotional expressions on players' emotional experience**<br>*** Effects of coaches' emotional expressions on players' inferences regarding the quality of their performance**<br>*** Effects of coaches' emotional expressions on team performance** | Coaches' expressions of happiness and anger predicted (1) players' experiences of happiness and anger, (2) players' inferences about the quality of their performance, and (3) objective team performance outcomes. Regarding team performance, results indicated that coaches' expressions of happiness were conducive to team performance, whereas expressions of anger were not. **Conclusions** The current results provide first-time quantitative evidence for the beneficial effects of coaches' positive emotional expressions on sports performance. The findings support key tenets of EASI theory and have implications for the broader literature on coaching and leadership. Highlights • We examined how coaches' emotional expressions influence players. • We derived hypotheses from Emotions as Social Information (EASI) theory. • We tested the hypotheses in the context of baseball and soccer matches. • Coaches' emotion expressions predicted players' emotions and performance inferences. • Coaches' pre-game happiness |

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| | | expressions had a positive impact on team performance. |

# APPENDIX 6: Categories, instruments and key findings within the cluster "Coaching behaviour"

**Table 14: Categories, instruments and findings. Cluster: Coaching behaviour**

| REFERENCE | CATEGORIES ANALISED AND MEASUREMENT INSTRUMENTS | KEY FINDINGS REPORTED |
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| (Alcaraz et al., 2015) | * **Coaches' Basic Psychological Need (BPN) satisfaction**:<br>- **Need for autonomy**: four items from the ***Standage, Duda, and Ntoumanis's research (2005)***.<br>- **Need for competence:** four items from the ***Perceived Competence scale of the Intrinsic Motivation Inventory*** (McAuley, Duncan, & Tammen, 1989).<br>- **Need for relatedness:** four items from the ***Acceptation scale of the E´chelle du Sentiment d'Appartenance Sociale*** (Richer & Vallerand, 1998).<br>* To what **degree coaches' BPN were thwarted**: ***Psychological Need Thwarting Scale*** (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011).<br>* **Behavioral Regulations**: **adaptation of the Behavioral Regulation in Sport Questionnaire (BRSQ**; Lonsdale, Hodge, & Rose, 2008) to the coaching context.<br>* **Psychological well-being**:<br>- **Coaches' positive affect**: five items from the ***Positive and Negative Affect Scale (PANAS***; Watson, Tellegen, & Clark, 1988).<br>- **Coaches' subjective vitality**: five items from the ***Subjective Vitality Scale*** (Ryan & Frederick, 1997). | The results provided support for the partial mediation model. Coaches' motivation mediated the relationships from both relatedness need satisfaction and basic psychological needs thwarting for coaches' well-being. In contrast, relationships between basic psychological needs satisfaction and thwarting and ill-being were only predicted by direct effects.<br><br>Conclusion: Our results highlight that 3 conditions seem necessary for coaches to experience psychological well-being in their teams: basic psychological needs satisfaction, especially relatedness; lack of basic psychological needs thwarting; and self-determined motivation. |

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| | * **Coaches' ill-being**: negative affect and perceived stress.<br>- **Negative affect:** five items from the ***PANAS***.<br>- **Coaches' perceptions of stress**: short form of the ***Perceived Stress Scale (PSS-10***; see Cohen & Janicki-Deverts, 2012). | |
| (Amorose & Anderson-Butcher, 2007) | * Athletes' perception of the **autonomy-supportive coaching**: ***short version of the Sport Climate Questionnaire (SCC)***.<br>* **Fundamental human needs (athletes' perceptions of competence, autonomy, and relatedness**): same ***measures employed by Hollembeak and Amorose (2005)***.<br>* **Motivational orientation (athletes' motivation for participating in their sport)**: ***The Sport Motivation Scale*** (Pelletier et al., 1995). | Participant accounts revealed that the artefacts of the organisational culture included the rugged, industrial appearance of the gym (visual structures and processes) and the social nature of members' interactions prior to/following each workout (observable behaviour). Espoused beliefs and values identified included pride in the gym and their workouts, inclusivity, and a strong sense of community that extended beyond the gym. A shared underlying assumption was the common goal of improving their health and well-being. Highlighting CrossFit's organisational culture provides insight into some of the factors that have made it a successful organisation. |
| (Appleton & Duda, 2016) | * Participants' perceptions of coach-created **Empowering and disempowering motivational climates:** *EDMCQ-C* (Appleton, Ntoumanis, Quested, Viladrich, & Duda, 2016).<br>- The *empowering* climate items measure **task-involving**, **autonomy-supportive** and **socially-supportive coaching**.<br>- The *disempowering* climate items measure **ego- involving** | The interaction between disempowering and empowering climate dimensions was significant and predicted 1% unique variance in 3 outcome variables (i.e., enjoyment, reduced accomplishment, and physical symptoms). The Johnson-Neyman technique |

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| | and **controlling climate dimensions**.<br>*** Enjoyment:** The *enjoyment subscale from the Intrinsic Motivation Inventory* (McAuley, Duncan, & Tammen, 1989)<br>*** Athlete burnout:** The 15-item *Athlete Burnout Questionnaire (ABQ*; Raedeke & Smith, 2009):<br>- **participants' self-reported reduced sense of athletic accomplishment**<br>- **perceived emotional and physical exhaustion**<br>- **sport devaluation**<br>*** Global self-esteem:** A *5-item global self-esteem measure* was obtained *from the Short Version of the Physical Self Description Questionnaire* (Marsh, Martin, & Jackson, 2010)<br>* Participants' experiences of **Symptoms of physical ill-health:** *Physical Symptom Checklist* (Emmons, 1991). | was employed to plot and probe the significant interactions, which revealed moderately strong to strong values of an empowering climate tempered the significant relationship between a disempowering climate and the three outcome variables. The findings from this study have implications for coach education and suggest programmes that train coaches to understand how to create empowering climates and avoid (or dramatically reduce) disempowering climates are warranted. |
| (Balaguer et al., 2008) | * **Apoyo a la Autonomía:** ***versión castellana*** (Balaguer, Castillo, Duda, Álvarez, y Díaz, 2004; Balaguer, Castillo y Duda, 2008), del Cuestionario de Clima en el Deporte (***Sport Climate Questionnaire***, n. d.). Tiene sus ***orígenes en el Health-Care-Climate Questionnaire (HCCQ***, Williams, Grow, Freedman, Ryan y Deci, 1996).<br>* **Competencia:** ***Escala de Competencia Percibida del Cuestionario de Motivación Intrínseca (McAuley, Duncan, y Tammen***, 1989).<br>* **Autonomía:** ***Escala de Autonomía Percibida en el Deporte elaborada por Reinboth y Duda*** (2006).<br>* **Relación:** ***subescala de Aceptación de la Escala de Necesidad de Relación de Richer y Vallerand*** (1998). | The robust method structural equation modelling analysis using maximum likelihood (LISREL 8.54) showed that athletes' perceptions of autonomy support from coaches predicted their satisfaction of the needs for autonomy and relatedness. These needs, along with perceived competence, predicted self-determined motivation, which in turn corresponded to greater self-esteem and life satisfaction. |

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| | * **Motivación auto-determinada:** ***versión castellana*** (Balaguer, Castillo y Duda, 2003, 2007) de la ***Escala de Motivación Deportiva (SMS***; Pelletier et al., 1995)<br>* **Autoestima:** ***subescala de Auto-Valía del Cuestionario de Autodescripción (SDQ-III***; Marsh, Richards, Johnson, Roche y Tremayne, 1994).<br>* **Satisfacción con la vida:** ***versión castellana*** (Atienza, Pons, Balaguer y García-Merita, 2000) de la ***Escala de Satisfacción con la Vida (SWLS***; Diener, Emmons, Larsen y Griffin, 1985). | |
| (Bartholomew, Ntoumanis, Ryan, et al., 2011): study 1 | **Study 1:**<br>* Athletes' perceptions of their coach's **Autonomy-supportive behaviors**: **six items taken from the *Health-Care Climate Questionnaire (HCCQ***; Williams, Grow, Freeman, Ryan, & Deci, 1996) and **modified for their use in sport.**<br>* Athletes' perceptions of their coach's **Controlling behaviors**: **15-item *Controlling Coach Behaviors Scale (CCBS***; Bartholomew et al., 2010): **controlling use of rewards**, **negative conditional regard**, **intimidation**, and **excessive personal control**.<br>* **Need satisfaction**:<br>(1) **satisfaction of the need for autonomy**: five items collated by ***Standage, Duda, and Ntoumanis (2003)***.<br>(2) **Satisfaction of the need for competence: five items from the *competence subscale of the Intrinsic Motivation Inventory (IMI;*** McAuley, Duncan, & Tammen, 1989). | In cross-sectional Studiy 1, structural equation modelling analyses supported latent factor models in which need satisfaction was predicted by athletes' perceptions of autonomy support, and need thwarting was better predicted by coach control. Athletes' perceptions of need satisfaction predicted positive outcomes associated with sport participation (vitality and positive affect), whereas need thwarting more consistently predicted maladaptive outcomes (disordered eating, burnout, depression, negative affect, and physical symptoms). In addition, athletes' perceptions of psychological need thwarting were significantly associated with perturbed physiological arousal (elevated levels of |

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| | (3) **Satisfaction of the need for relatedness:** **5-item *acceptance subscale of the Need for Relatedness Scale (NRS-10***; Richer & Vallerand, 1998).<br>* **Need thwarting**: **12-item *Psychological Need Thwarting Scale (PNTS***; Bartholomew et al., 2011).<br>* **Disordered eating**: ***Questionnaire for Eating Disorder Diagnoses (Q-EDD***; Mintz, O'Halloran, Mulholland, & Schneider, 1997).<br>* **Vitality (athletes' feelings of positive energy)**: ***five-item version of the Subjective Vitality Scale (SVS***; Ryan & Frederick, 1997)<br>* **Depression**: 7-item ***depression subscale of the Depression Anxiety Stress Scale (DASS***; Lovibond & Lovibond, 1995). | secretory immunoglobulin A) prior to training. The final study involved the completion of a diary and supported the relations observed in the cross-sectional studies at a daily level. These findings have important implications for the operationalization and measurement of interpersonal styles and psychological needs |
| (Blanchard et al., 2009) | * Coach's controlling interpersonal style**:** (Based on Grolnick, Ryan &Deci, 1991) three items assesses the **extent to which athletes perceive their coach as controlling**<br>* **Cohesiveness** (extent to which the team is united in reaching the same goal)**:** ***group integration-task subscale from the Group Environment Questionnaire (GEQ***: Carron, Widmeyer, & Brawley, 1985).<br>* Perception of need satisfaction**:** 8 items assess the **perceptions of autonomy, competence and relatedness**.<br>* ***The sport motivation scale (SMS*; adapted from Pelletier et al., 1995 and Vallerand & O'Connor, 1991).<br>* **Subjective well-being** in sports: *two subscales*:<br>**1) athletes' positive emotions** experienced when playing | Perceptions of cohesiveness positively predicted the satisfaction of the basic needs. Perceptions of coaches'' controlling interpersonal style negatively impacted feelings of autonomy. In turn, psychological needs predicted self-determination in sports ensuing greater sport satisfaction and positive emotions in sports. Tests of indirect effects also supported the mediating role of psychological needs and self-determination. Conclusion: Results are discussed in light of the different types of motivational |

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| | basketball<br>**2)** their **degree of satisfaction** with their sport | antecedents and their influence on the psychological needs |
| (Borges-Silva et al., 2017) | * **Percepción de satisfacción de las necesidades psicológicas básicas** en contextos de ejercicio físico. ***Psychological Need Satisfaction in Exercise Scale (PNSE)*** de Wilson, Rogers, Rodgers, y Wild (2006) ***validada al contexto español*** por Moreno-Murcia, Marzo, Martínez-Galindo, y Conte (2011): **competencia**, **autonomía** y **relación con los demás**.<br>* **Motivación intrínseca**. ***subescala del Behavioral Regulation in Sport Questionnaire (BRSQ)*** de Lonsdale, Hodge, y Rose (2008), ***validado al contexto español*** por Moreno-Murcia et al. (2011) y adaptado al contexto de ejercicio físico.<br>* **Autoestima**. ***dimensión autoestima perteneciente al cuestionario de medida del autoconcepto físico de Moreno y Cervelló (2005), tomado del original Physical Self-Perception Profile (PSPP)*** de Fox y Corbin (1989).<br>* **Satisfacción con la vida**. ***cuestionario Escala de Satisfacción para la Vida (ESDV-5)*** de Vallerand, Blais, Briére, y Pelletier (1989) ***validada al contexto español.*** | Using structural equation analysis, perceived basic psychological needs positively predicted intrinsic motivation, positively influencing esteem and satisfaction with lifetime. The predictive model exposed the importance of promoting satisfaction of autonomy, competence and social relationships for improved self-esteem. Consequently, greater satisfaction with the women's lives towards obtaining positive effects from practicing fitness classes were found, although necessary experimental studies that show a cause and effect relationship between these variables are needed. |
| (Breske et al., 2017) | **Psychophysiological stress responses (e.g., cortisol)**<br>Cortisol was measured at five time points throughout the study via ***saliva samples***.<br>***self-reported anxiety and self-confidence (CSAI-2)***. | Results showed a marked increase in cortisol (as measured by percent change from baseline) in the control group, but not the experimental group. Psychological responses were stable across groups. Conclusion |

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| | | Providing athletes and exercisers with nothing more than basic information on AGPT can reduce their physiological markers of psychosocial stress in ego-involving climates. Such education may be a beneficial practice for coaches, physical educators, and trainers. |
| (Healy et al., 2014) | * **Perceptions of coach behaviours**:<br>- **perception of coach autonomy support**: ***adapted items from the Health-care climate questionnaire*** (Williams, Grow, Freedman, Ryan, & Deci, 1996).<br>- **Perception of coach controlling behaviour:** ***Controlling Coach Behaviors Scale*** (Bartholomew et al., 2010).<br>* **Basic Psychological Needs Satisfaction and Thwarting**: ***Basic Needs Satisfaction in Sport Scale (BNSSS***; Ng, Lonsdale, & Hodge, 2011) & ***Psychological Need Thwarting Scale (PNTS***; Bartholomew et al., 2011b).<br>* **Goal-related variables**: Athletes identified their **most important personal goal** for the season and rated the extent that athletes were striving with **extrinsic**, **introjected**, **identified** and **intrinsic motives**.<br>* **Well-being and Ill-being**:<br>- ***Subjective Vitality Scale (SVS***; Ryan & Frederick, 1997): **psychological well-being**.<br>- **psychological ill-being**: ***Athlete Burnout Questionnaire (ABQ***; Raedeke & Smith, 2001): three subscales: **Reduced** | Structural equation modelling demonstrated that coach behaviours were related to needs satisfaction and thwarting, which were related to autonomous and controlled goal motives respectively. Autonomous motives were related to well- and ill-being; controlled motives were only related to ill-being. Over time, only end-of-season autonomous goal motives were related to goal attainment. The findings provide an insight into how coaches can facilitate optimum goal striving and well-being in their athletes. |

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| | **sense of accomplishment**, **Devaluation** and **Emotional/Physical exhaustion**<br>* **Physical ill-being symptoms**: ***Physical Symptoms Checklist (Emmons, 1991)***.<br>- **S-IgA** was measured using ***saliva samples*** | |
| (Hodge & Lonsdale, 2011) | * **Athletes' perceptions of Autonomy-Supportive and Controlling Coaching Styles**:<br>- ***14 items adapted from the Health Care Climate Questionnaire*** (Williams, Cox, Kouides, & Deci, 1999): **autonomy-supportive coaching style**<br>- ***4 items from the College-Student Scale*** (Grolnick, Ryan, & Deci, 1991): **controlling coaching style** (e.g., "My coach insists that I do things his/her way") in competitive sport.<br>* ***Behavioral Regulation in Sport Questionnaire-6 (BRSQ-6)*** (Lonsdale, Hodge, & Rose, 2008): six types of motivational regulation as specified in SDT. subscales to measure **intrinsic motivation** (IM), **integrated regulation** (IG), **identified regulation** (ID), **introjected regulation** (IJ), **external regulation** (EX), and **amotivation** (AM).<br>* ***Moral Disengagement in Sport Scale–Short (MDSS-S)*** (Boardley & Kavussanu, 2008): **athletes' overall sport moral disengagement**. | Results indicated that an autonomy-supportive coaching style was associated with prosocial behaviour toward teammates; this relationship was mediated by autonomous motivation. Controlled motivation was associated with antisocial behaviour toward teammates and antisocial behaviour toward opponents, and these two relationships were mediated by moral disengagement. The results provide support for research investigating the effect of autonomy-supportive coaching interventions on athletes' prosocial and antisocial behaviour. |

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| | * Athletes' ***Prosocial and Antisocial Behavior in Sport Scale (PABSS)*** (Kavussanu & Boardley, 2009): four subscales: (i) **prosocial behaviour toward teammates**, (ii) **prosocial behaviour toward opponents**, (iii) **antisocial behaviour toward teammates**, and (iv) **antisocial behaviour toward opponents**. | |
| (Matosic et al., 2017) | * **autonomy-supportive and controlling coach behaviours**: ***12 vignettes*** which corresponded to the 12 most important characteristics of narcissism: hypersensitivity to criticism, authority, self-sufficiency, superiority, exhibitionism, exploitativeness, entitlement, feelings of inferiority, lack of empathy, amorality, arrogance, and grandiosity.<br>* **narcissism:** ***40-item and forced-choice Narcissistic Personality Inventory (NPI***; Raskin & Terry, 1988).<br>* **dominance:** ***11-item International Personality Item Pool Dominance Scale*** (Goldberg et al., 2006), based on the California Personality Inventory (Wink & Gough, 1990).<br>* **Empathic concern:** ***7-item Empathic Concern Subscale of the Interpersonal Reactivity Scale*** (Davis, 1980). | Regression analyses revealed a positive direct relation between narcissism and controlling coach behaviours. Furthermore, empathy (but not dominance) mediated the positive and negative indirect effects of narcissism on controlling and autonomy-supported interpersonal styles, respectively. We discuss these findings in terms of their implications for coaching and the quality of athletes' sport experiences. |

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| (Matosic et al., 2016) | * **Coach narcissism**: ***40-item Narcissistic Personality Inventory (NPI***; Raskin & Terry, 1988).<br>* **Coach dominance**: ***11-item International Personality Item Pool (IPIP***: Goldberg et al., 2006), based on the California Personality Inventory (CPI; Wink & Gough, 1990)<br>* **coach empathic concern**: ***7-item empathic concern subscale of the Interpersonal Reactivity Scale (IRI;*** Davis, 1983).<br>* **Athletes' perceptions of their coach's controlling behaviors**: ***15-item Controlling Coach Behaviors Scale (CCBS***; Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010).<br>* **Need frustration**: ***12-item Psychological Need Thwarting Scale (PNTS***; Bartholomew et al., 2011b). three subscales corresponding to athletes' autonomy, competence, and relatedness needs.<br>* **Attitudes toward doping**: ***5-item modified version of the Performance Enhancement Attitude Scale (PEAS***; Petróczi & Aidman, 2009) by Gucciardi, Jalleh, and Donovan (2011). | Multilevel path analysis revealed that coach narcissism was directly and positively associated with athletes' perceptions of controlling behaviours and was indirectly and positively associated with athletes' reports of needs frustration. In addition, athletes' perceptions of coach behaviours were positively associated-directly and indirectly-with attitudes toward doping. The findings advance understanding of controlling coach behaviours, their potential antecedents, and their associations with athletes' attitudes toward doping. |
| (Norris et al., 2017) | N/A | The findings demonstrate that coaches experience a variety of stressors relating to their performance and that of the athletes they work with in addition to organizational, contextual, interpersonal, and intrapersonal stressors. The findings also highlight that coaches use a variety of coping strategies (e.g., problem solving, social support, |

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| | | escaping the stressful environment) to reduce the negative outcomes of stress. Five studies that were included in this review focused on coaches' well-being and found that basic psychological needs satisfaction, lack of basic psychological needs thwarting, and self-determined motivation are needed for coaches to be psychologically well. **Conclusion**: Future research should address gaps in extant literature by using longitudinal study designs to explore coaches' appraisals of stressors, coping effectiveness, social support, and well-being among the unique sports coaching population. |
| (Schüler et al., 2016) | * ***Picture Story Exercise***: **implicit motive dispositions** (McClelland et al., 1989; Murray, 1943).<br>* ***Operant Motive Test (OMT)***. **implicit autonomy and power and achievement motives from the OMT**. Specifically, the OMT freedom categories were used to score for the **implicit autonomy disposition**. The OMT's power categories and achievement categories were used to assess the **implicit power and achievement motive**, respectively.<br>* **Autonomy Satisfaction**: Autonomy subscale of the ***Basic Psychological Needs Scale*** ***(Gagné, 2003; Kashdan, Julian, Merritt, & Uswatte, 2006)***.<br>* **Flow experience**: ***Flow Short Scale (FSS***; Rheinberg, | Study 1 showed that individuals with a strong implicit autonomy (but not power or achievement) motive disposition derived more flow experience from felt autonomy than individuals with a weak implicit autonomy disposition. Study 2 revealed that perceived autonomy support from sports coaches, which we experimentally induced with a vignette method, leads to autonomy satisfaction, leading in turn to positive effects on well-being. This indirect effect held at high and average but not low implicit |

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| | Vollmeyer, & Engeser, 2003): two subscales: **Flow-Absorption** and **Flow-Automaticity**. | autonomy disposition. The results indicate that the degree to which people benefit from autonomy need satisfaction depends on their implicit disposition toward autonomy. |
| (A. Smith et al., 2007) | * **Personal Goals**: ***idiographic goal methodology advocated within self-concordance research (Sheldon, 2002).*** to nominate four goals that they were currently pursuing.<br>* **Need Satisfaction**: Satisfaction of the basic psychological needs for autonomy, competence, and relatedness: ***six autonomy items from Standage, Duda, and Ntoumanis (2005), six items from the perceived competence subscale of the Intrinsic Motivation Inventory*** (McAuley, Duncan, & Tammen, 1989), ***and five items from the acceptance subscale of the Need for Relatedness Scale*** (Richer & Vallerand, 1998), respectively.<br>* **Psychological well-being:** ***20-item Positive and Negative Affect Schedule*** (Watson, Tellegen, & Clark, 1988), ***five-item Satisfaction With Life Scale*** (Diener, Emmons, Larsen, & Griffin, 1985), and ***five-item emotional/physical exhaustion subscale of the Athlete Burnout Measure*** (Raedeke & Smith, 2001).<br>* **Perceptions of coach autonomy support:** ***seven items taken from the Health-Care Climate Questionnaire*** (Williams, Grow, Freedman, Ryan, & Deci, 1996) modified for sport. | Structural equation modelling with a sample of 210 British athletes showed that autonomous goal motives positively predicted effort, which, in turn, predicted goal attainment. Goal attainment was positively linked to need satisfaction, which, in turn, predicted psychological well-being. Effort and need satisfaction were found to mediate the associations between autonomous motives and goal attainment and between attainment and well-being, respectively. Controlled motives negatively predicted well-being, and coach autonomy support positively predicted both autonomous motives and need satisfaction. Associations of autonomous motives with effort were not reducible to goal difficulty, goal specificity, or goal efficacy. These findings support the self-concordance model as a framework for further research on goal setting in sport. |

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| (A. Smith et al., 2010) | * **Goal-Related Measures**: ***self-generate*** a salient **personal sports goal** for the entire sports season.<br>* **Goal Motives** and **Goal Difficulty**: using the idiographic goal methodology advocated by Sheldon and Elliot (1999). ***participants rated*** **the extent to which they were pursuing their goals in terms of four reasons reflecting intrinsic**, **identified**, **introjected**, and **external regulations**.<br>* **Implementation Intentions**: participants' personal use of implementation intentions, that means, planning the when, where, and how of goal striving, in addition to "if-then" plans for goal-related behaviours. We assessed the use versus non-use of intentions by the participants.<br>* **Perceptions of Coach Behaviours**:<br>**- Participants' perceptions of coach autonomy support**<br>**- Perceptions of coaches' controlling behaviours:** The ***scale*** included the use of controlling statements and conditional regard, the provision of punishments and rewards without competence information, the demonstration of overt physical control, and the prompting of ego-involving motives.<br>* **Psychological Well-Being:**<br>- ***Positive and Negative Affect Schedule*** (Watson, Tellegen, & Clark, 1988)<br>- ***Satisfaction With Life Scale*** (Diener, Emmons, Larsen, & Griffin, 1985)<br>- ***Emotional/physical exhaustion subscale of the Athlete Burnout Measure*** (Raedeke & Smith, 2001). | Structural equation modelling analysis with a sample of 108 athletes revealed coach behaviours as predictors of goal motives, which in turn predicted psychological well-being after 8 weeks. Supplementary regression analyses showed no interaction between autonomous goal motives and implementation intentions; however, a synergistic effect was identified for controlled goal motives such that controlled motives furnished with implementation intentions resulted in lower well-being than controlled motives alone. In further analyses, the motives underlying an implementation intention were found to mediate the paths from goal motives to well-being. The findings are discussed in terms of the roles played by goal motives, implementation intentions, and implementation intention motives during goal striving. |

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| (Stebbings et al., 2011) | * **Psychological Need Satisfaction**: Satisfaction of competence, autonomy and relatedness: ***Basic Need Satisfaction at Work Scale (BNSAW***; Deci et al., 2001) adapted to the coaching context.<br>* **Psychological Well-Being**: **coaches' positive affect and subjective vitality**:<br>- **Positive affect**: ***10-item positive affect subscale from the Positive and Negative Affect Scale*** (Watson, Tellegen, & Clark, 1988).<br>- **Coaches' subjective vitality**: ***seven-item Subjective Vitality Scale*** (Ryan & Frederick, 1997).<br>* **Coaches' perceptions of their Autonomy Supportive Behaviours**: ***six-item version of the Health Care Climate Questionnaire (HCQ***; Williams, Grow, Freedman, Ryan, & Deci, 1996) adapted to the sport context.<br>* **Coaches' perceptions of their use of controlling behaviors**:***15-item Controlling Coach Behaviors Scale (CCBS***; Bartholomew et al., 2010), modified to reflect a coach's perspective.<br>* **Social Desirability**. A ***short form of the Marlowe-Crowne social desirability scale*** (Strahan & Gerbasi, 1972): participants' tendency to respond to questions in a socially desirable manner. | Structural equation modelling demonstrated that coaches' competence and autonomy need satisfaction positively predicted their levels of psychological well-being, as indexed by positive affect and subjective vitality. In turn, coaches' psychological well-being positively predicted their perceived autonomy support toward their athletes, and negatively predicted their perceived controlling behaviours. Overall, the results highlight the importance of coaching contexts that facilitate coaches' psychological need satisfaction and well-being, thereby increasing the likelihood of adaptive coach interpersonal behaviour toward athletes. |
| (Stebbings et al., 2015) | * **Positive and negative affect**: ***Positive And Negative Affect Schedule (Watson et al., 1988)***.<br>* **Integration**: extent to which coaching was personally expressive and congruent with the coaches' sense of self over | Controlling for social desirability, multilevel analyses revealed that within-person increases and individual differences in positive affect and integration were |

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| | the previous month: ***integration subscale** of the **Work Motivation Inventory (WMI***; Blais, Lachance, Vallerand, Briere, & Riddle, 1993) adapted to the coaching context.<br>* **Coaches' levels of devaluation:** ***five-item Devaluation subscale of the Athlete Burnout Questionnaire*** (Raedeke &Smith, 2001), adapted to the coaching context.<br>* **Coaches' perceptions of their autonomy supportive style**: ***six-item version of the Health Care Climate Questionnaire (HCCQ***; Williams, Grow, Freedman, Ryan, & Deci, 1996), adapted to the sport context.<br>* ***15-item Controlling Coach Behaviors Scale (CCBS***; Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010), adapted to reflect a coach's perspective: **coaches' perceptions of their controlling interpersonal style** over the previous month.<br>* **Social desirability**: ***short form of the Marlowe-Crowne Social Desirability Scale*** (Strahan & Gerbasi, 1972). | positively associated with autonomy support. Conversely, within-person increases and individual differences in negative affect, but not devaluation, were associated with increased use of interpersonal control. The indicators of well-being did not predict interpersonal control and the indicators of ill-being did not predict autonomy support. In their entirety, the present findings suggest that autonomy supportive and controlling interpersonal styles have unique correlates, and affective determinants may play a particularly central role in controlling interpersonal styles. Supporting the psychological health of coaches may lead them to create an adaptive interpersonal environment for their athletes. |
| (Stebbings et al., 2012) | * The **coaching context**:<br>- **opportunities for professional development** based on the ***types of opportunities that have been reported as pertinent to sport coaches (Allen & Shaw, 2009***).<br>- **Job security:** ***two-item job security subscale of Chelladurai and Ogasawara's (2003)***<br>- **Coach Satisfaction** ***Questionnaire***, which was ***supplemented with two additional created items*** (e.g., "I am satisfied with my job security").<br>- **Work-life conflict**: adapted from the ***Work-Family Conflict*** | Controlling for socially desirable responses, structural equation modelling revealed that greater job security and opportunities for professional development, and lower work-life conflict were associated with psychological need satisfaction, which, in turn, was related to an adaptive process of psychological well-being and perceived autonomy support toward athletes. In contrast, higher work-life conflict and fewer |

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| | *Scale* (Netemeyer, Boles, & McMurrian, 1996): **general sources of conflict**.<br>* **Psychological need satisfaction**. Satisfaction of **competence**, **autonomy**, and **relatedness:** ***Basic Need Satisfaction at Work Scale (BNSAW***; Deci et al., 2001) adapted to the coaching context.<br>* **Psychological need thwarting**: ***12-item Psychological Need Thwarting Scale (PNTS***; Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011) adapted to the coaching context: **thwarting of coaches' psychological needs**: Competence, autonomy, and relatedness<br>* **Psychological well-being**: **coaches' positive affect and subjective vitality**.<br>- **Positive affect:** ***10-item positive affect subscale from the Positive And Negative Affect Scale (PANAS***; Watson et al., 1988).<br>* **Psychological ill-being**: **coaches' negative affect and emotional and physical exhaustion**:<br>- **Negative affect**: ***10-item negative affect subscale from the PANAS***.<br>* **Coaches' perceptions of their autonomy supportive style**. ***The six-item version of the Health Care Climate Questionnaire (HCCQ***; Williams, Grow, Freedman, Ryan, & Deci, 1996) adapted to the sport context.<br>* **Coaches' perceptions of their controlling interpersonal style:** ***15-item Controlling Coach Behaviors Scale (CCBS***; Bartholomew, et al., 2010), modified to reflect a coach's | opportunities for development were associated with a distinct maladaptive process of thwarted psychological needs, psychological ill-being, and perceived controlling interpersonal behaviour. The results highlight how the coaching context may impact upon coaches' psychological health and their interpersonal behaviour toward athletes. Moreover, evidence is provided for the independence of adaptive and maladaptive processes within the self-determination theory paradigm. |

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| | perspective.<br>* **Social desirability**. ***short form of the Marlowe-Crowne social desirability scale*** (Strahan & Gerbasi, 1972). | |
| (Torregrosa et al., 2014) | * **Estilo controlador**. ***Controlling Coach Behavior Scale (CCBS)*** de Bartholomew, Ntoumanis, y Thøgersen-Ntoumani (2010), validada al contexto español por Castillo et al. (2010).<br>* **Percepción de apoyo a la autonomía**: ***Escala de Apoyo a la Autonomía en Contextos de Ejercicio (PASSES)*** de Hagger et al. (2007) validada al contexto español por Moreno, Parra, y González-Cutre (2008).<br>* **Mediadores psicológicos**: ***Escala de Medición de las Necesidades Psicológicas en el Ejercicio (PNSE)*** de Wilson, Rogers, Rodgers, y Wild (2006) validada al contexto español por Moreno-Murcia, Marzo, Martínez-Galindo, y Conte (2011). tres factores: **competencia**, **autonomía**, y **relación con los demás**.<br>* **Satisfacción con la vida:** ***escala de satisfacción con la vida (ESDV-5)*** de Vallerand, Blais, Briére, y Pelletier (1989), validada al contexto español por Atienza, Pons, Balaguer, y García-Merita (2000) y Atienza, Balaguer, y García-Merita (2003). | In linear regression analysis we observed that the controlling coach behaviour negatively affected life satisfaction, whereas autonomous support through psychological mediators positively affected life satisfaction. The results confirm our predicted effects on the life satisfaction of healthy exercise practitioners. |
| (Wayment & McDonald, 2017) | ****we developed a scale*** to assess satisfaction with key features of this unique training program.<br>- **Satisfaction with Individualized, Small-Group Training**.<br>- ***9 items from the basic psychological needs scale***: **extent to which basic psychological needs for competence,** | In support of the basic tenets of self-determination theory, satisfaction with small-group, individualized training supported basic psychological needs, which in turn were associated with greater |

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| | **autonomy, and relatedness are met as a result of membership and participation** in the fitness studio.<br>* **Autonomous Exercise Motivation**: ***self-regulation questionnaire for exercise scale***. Four subscales were created (external regulation, introjected regulation, identified, and intrinsic).<br>* **Exercise Self-Efficacy** (ESE): ***3 items from the New General Self-Efficacy Scale***.<br>* **Well-Being**: ***5-item satisfaction with life scale***<br>* **Self-Reported Health and Energy**: ***Three items*** were averaged to form this measure.<br>* **Supportive and Self-Image Workout Goals**. We ***adapted a measure of interpersonal goals for the exercise setting***. | autonomous exercise motivation and life satisfaction. Satisfaction with this unique training method was also associated with greater exercise self-efficacy. Autonomous exercise motivation was associated with both exercise self-efficacy and greater self-reported health and energy. Discussion focuses on why exercise programs that foster a sense of social belonging (in addition to motivation and efficacy) may be helpful for successful adherence to an exercise programme. |

# APPENDIX 7: Categories, instruments and key findings within the cluster "Critical perspectives"

### Table 15: Categories, instruments and findings. Cluster: Critical perspectives

| REFERENCE | CATEGORIES ANALISED AND MEASUREMENT INSTRUMENTS | KEY FINDINGS REPORTED |
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| (Aicinena, 2011) | * Pride and hubristic behaviour | Examples of hubristic behaviour and the harm that it causes in sport are presented. |
| (Chinkov & Holt, 2016) | *** Perceived Influence of BJJ on Participants' Lives**<br>*** Reported Life Skills:**<br>**- Respect for others**<br>**- Perseverance**<br>**- Self-confidence**<br>**- Healthy habits**<br>*** Ways Life Skills Were Acquired**<br>*** Peer Support**<br><br>***Individual semistructured interviews***. Interview transcripts were subjected to thematic analysis. | Participants thought their involvement in Brazilian jiu-jitsu had changed their lives. These changes occurred via the acquisition of four life skills reflecting values and characteristics of the sport: respect for others, perseverance, self-confidence, and healthy habits. Head instructors and peer support facilitated the acquisition of life skills. Combined, the values of the sport, instructors, and peers created an atmosphere for learning life skills implicitly. |
| (Denison et al., 2017) | * Sports' disciplinary legacy | Coaching with greater consideration for athletes' unique qualities and developmental differences needs to entail coaching in a less disciplinary way and with an awareness and appreciation of the many unseen effects that disciplinary power can have on coaches' practices and athletes' bodies. |

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| (Dumčienė et al., 2015) | * ***Body Shape Questionnaire*** (Cooper, Taylor, Cooper, & Fairburn, 1986): women's dissatisfaction with their body shapes.<br>* **sense of coherence level**: ***Antonovsky (1987) 13 items scale***: three subscales: **comprehensibility** (cognitive component), **meaningfulness** (the motivational component) and **manageability** (the behavioural component). | After six months of regular fitness classes women's satisfaction of their body and their sense coherence level improved significantly. Relations between body shape dissatisfaction and sense of coherence, body shape dissatisfaction and manageability, comprehensibility and manageability were found. Conclusions. Systematic fitness training positively affects women's satisfaction with their body. Understanding of the capability of controlling their body shape was improved. There was a significant relationship between dissatisfaction with their body shape and sense of coherence. The effect of physical activity improved the values of all three components of the sense of coherence construct. The values of comprehensibility, meaningfulness and manageability indicators show that respondents may already have a better control of their sense of coherence. |
| (Gearity & Metzger, 2017) | * Microaggressions: Race, gender identity, sexual orientation, and religious microaggressions<br>* Microaffirmations<br>* Implications of microaggressions for coaching practice | Microaggressions are exercised as disciplinary power to control athletes' bodies. A discursive understanding of power-knowledge produces coach and athlete identities and practices, and some plausible |

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| | * Intersection of sport coaching, mental health, and social identities: ***stories and interpretations*** | mental health effects resulting from these interactions. |
| (Gearity & Murray, 2011) | ***experiences of poor coaching***:<br>(1) poor teaching by the coach<br>(2) uncaring<br>(3) unfair<br>(4) inhibiting athlete's mental skills<br>(5) athlete coping. | The five themes derived from athletes' reports were: poor teaching by the coach, uncaring, unfair, inhibiting athlete's mental skills, and athlete coping. Two of these themes, inhibiting athlete's mental skills and coping, are closely connected to psychological constructs, and are presented in this paper. The theme of inhibiting athlete's mental skills was made up of athletes' descriptions of poor coaches as being distracting, engendering self-doubt, demotivating, and dividing the team. The theme of athlete coping describes how athletes responded to being poorly coached. Conclusions: Researchers conclude that the two themes, inhibiting athlete's mental skills and athlete coping, are related to several constructs in sport psychology literature such as motivation, self-efficacy, focus and concentration, team cohesion, and stress and coping. Instruction on coping skills is warranted for athletes dealing with poor coaching. Future research should also |

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| | | examine the relationship between coping skills and dropout in youth sport. |
| (Hillier et al., 2019) | * Validated ***Rapid Weight Loss Questionnaire (RWLQ)*** was adapted for the current study to ensure appropriateness to MMA. The questions covered the level and frequency of competition, training, athletic achievements, weight history, diet and RWL. | Sex-specific data were analysed, and subgroup comparisons were made between athletes competing at professional and amateur levels. Most athletes purposefully reduced body weight for competition (men: 97.2%; women: 100%). The magnitude of RWL in 1 week prior to weigh-in was significantly greater for professional athletes compared with those competing at amateur level (men: 5.9% vs. 4.2%; women: 5.0% vs. 2.1% of body weight; $p < .05$). In the 24 hr. preceding weigh-in, the magnitude of RWL was greater at professional than amateur level in men (3.7% vs. 2.5% of body weight; $p < .05$). Most athletes "always" or "sometimes" used water loading (72.9%), restricting fluid intake (71.3%), and sweat suits (55.4%) for RWL. Coaches were cited as the primary source of influence on RWL practices (men: 29.3%; women: 48.1%). There is a high reported prevalence of RWL in MMA, at professional and amateur levels. Our findings, constituting the largest inquiry to |

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| | | date, call for urgent action from MMA organizations to safeguard the health and well-being of athletes competing in this sport. |
| (Hõs, 2005) | * *Rosenberg Self-esteem Scale (1965)*: **self-esteem**<br>* *Tennessee Self-image Test* (Dévai & Sipos, 1986): total self-image (TS) scale: **body image (BI), moral self-image (MS), individual self-image (IS), family self-image (FS), social self-image (SS).** | The results of the study showed significant improvements in body image for those middle-aged women who participated in the one- year long aerobic dance exercise programme, while the body images of the control group remained the same. This shows the important intervening role of satisfaction with body image of middle-aged women between systematic aerobic dancing and self-esteem. The one year long systematic aerobic dance programme had a positive effect on self-image, self-esteem, physical condition, and an evaluation of the environment of middle-aged women. On the basis of the results we may conclude that an improved body image can positively influence and stabilize self-esteem. Furthermore, we may assume that the improved self-esteem and self- image can contribute to improvements of quality in the lives of middle-aged women and it may |

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| | | compensate for the negative effects of the menopausal period. |
| (Huberty et al., 2008) | * ***Demographic and health history questionnaire***<br>* ***Modifiable Activity Questionnaire (MAQ)*****: adherence** classification.<br><br>Data were collected from ***focus groups, interviews***, and ***e-mails***, and analysis used grounded theory. | The central category related to physical activity adherence was self-worth. Motivation, activity enjoyment, priorities, body image, ability to access support, and self-regulation skills had an impact on the self-worth of non-adherers and adherers. Women must value themselves enough to continue to participate in physical activity once they start. Exercise and fitness professionals are encouraged to use strategies to increase self-worth and long-term adherence to physical activity. Some recommended strategies include (a) increasing motivation and enjoyment relative to activity, (b) making activity a high priority in a woman's 4/c, (c) improving or deemphasizing body image, (d) increasing a woman's ability to access support, and (e)facilitating the use of self-regulation strategies. This study is the first to examine qualitative perspectives of exercise adherence among women who completed a structured exercise program. Several concepts related to adherence presented in |

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| | | the quantitative literature are confirmed and enhanced in this study. |
| (Mickelsson, 2020) | * **Aggression:** ***Buss-Perry Aggression Questionnaire (BPAQ***; Buss & Perry, 1992). four subscales: **physical aggression**, **verbal aggression**, **hostility** and **anger**.<br>* **Pro-social behaviour:** ***Prosocialness Scale for Adults (PSA***; Caprara, Steca, Zelli, & Capanna, 2005).<br>* **Self-control:** ***Self-Control Scale (SCS***; Alvarez-Rivera & Talbot, 2010).<br>* **Criminal frequency**. ***Total Delinquent Acts Measure (TDAM***; Elliott, Huizinga, & Ageton, 1985). | The results show that both groups displayed increased self-control and pro-social behaviour; however, MMA practitioners also reported increased aggressiveness, whereas BJJ practitioners experienced a decline in aggression. Accordingly, individuals who trained in MMA displayed substantially higher pre-existing aggression levels than the BJJ practitioners. The current results further corroborate research suggesting that modern martial arts and MMA may not be suitable for at-risk youth to practice, whereas traditional martial arts and sports with a healthy philosophical foundation may be effective in reducing antisocial behaviour while enhancing socially desirable behaviour among young people. |
| (Soulliard et al., 2019) | * ***Body Appreciation Scale-2 (BAS-2)*** (Tylka & Wood-Barcalow, 2015a).<br>* ***Functionality Appreciation Scale (FAS)*** (Alleva et al., 2017). | Student athletes reported higher levels of both facets of positive body image. Significant relationships were also found between positive body image and the sport- |

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| | * ***Dispositional Flow Scale – 2 (DFS-2)*** (Jackson, Martin, & Eklund, 2008): **general tendency to experience flow characteristics during physical activity**.<br>* ***Trait Sport-Confidence Inventory (TSCI)*** (Vealey, 1986): **how confident athletes generally feel when competing in sport**.<br>* ***Subjective Performance Questionnaire (SPQ)*** (new scale developed by the authors for the purposes of the current research study). This questionnaire is derived from previously used subjective performance measures (Vealey, 1986). It assesses **performance from the previous athletic season**. | related variables. The present results contribute novel findings to the positive body image literature and potential implications for coaches to encourage a culture that focuses less on body appearance and more on cultivating positive body image |
| (Stefansen et al., 2019) | *** The Safeguarding Ethic: An Athlete's: Need for Protection**<br>*** The Love Ethic: Feelings Cannot be Regulated**<br>*** The Athletic-Performance Ethic: Preserving the Sport "Contract"**<br><br>- **athletes' understandings of CASR**: ***20 gender-mixed focus group interviews***<br>- ***one-page questionnaire***: **background information on the participants, including their sport and coaching experiences**.<br>- "***video elicitation interview***" approach (e.g., Henry & Fetters, 2012): four short films involving a coach and an athlete in different situations that could be interpreted as having a sexual or intimate dimension to launch discussions. | We found that three different ethics were activated in the interviews: the safeguarding, love, and athletic-performance ethics. We discuss how these ethics are linked to different underlying "imaginaries," or cultural frames, about the meaning of sport in society and offer thoughts on how the results can inform sporting organizations' future prevention efforts. |

# APPENDIX 8: Glossary

**Autonomy-supportive** climate: refers to an environment or behaviour that promotes the person's instrinsic motives and goal contents, autonomous forms of behavioural regulations and self-determined motivation. These climates favour the satisfaction of needs.

**Basic Psychological Needs**: In SDT three basic psychological needs are explained, i.e. autonomy, competence and relatedness. The need for **autonomy** refers to perceive oneself as a causal agent of own life and having choices. The need for **competence** refers to experiencing mastery and perceiving one's own behaviour as effective. **Relatedness** refers to the need for social connectedness and interaction. Satisfaction of these needs is associated with mental well-being; meanwhile, needs thwarting is related to ill-being.

**Controlling climate**: refers to an environment or behaviour that favours extrinsic goal contents and non-autonomous forms of behavioural regulation. These climates impede self-determination and satisfaction of needs, thus increase thwarting of the needs and ill-being.

**Exercise**: "a subcategory of physical activity that is planned, structured, repetitive, and purposive, in the sense that the improvement or maintenance of one or more components of physical fitness is the objective. 'Exercise' and 'exercise training' are frequently used interchangeably and generally refer to physical activity performed during leisure time with the primary purpose of improving or maintaining physical fitness, physical performance, or health." (WHO, 2018, p. 98).

**Grassroots sport**: "Physical leisure activity, organized and non-organized, practised regularly at non-professional level for health, educational or social purposes" (WHO, 2018, p. 98).

**Harmonious passion**: "refers to a strong desire to engage freely in the activity that one loves and results from an autonomous internalization of the activity into the person's identity (...). The activity occupies a significant but not overpowering space in the person's identity and is in harmony with other aspects of the person's life" (Lafrenière et al., 2011, p. 145).

**Mental health**: "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community

**Obsessive passion**: "results from a controlled internalization of the activity into one's identity. This process originates from intrapersonal and/or interpersonal pressure either because particular contingencies are attached to the activity such as selfesteem, or because the excitement derived from activity engagement becomes uncontrollable. While this phenomenon leads the activity to be part of the person's identity, individuals with a predominant obsessive passion come to develop ego-invested self-structures toward the passionate activity (...). Obsessive passion for an activity forces individuals to engage in the passionate

activity in a rigid and narrow-minded manner that is detrimental to positive experiences (e.g., negative affect, rumination). (...) Individuals with an obsessive passion thus experience an uncontrollable urge to engage in their activity; their passion must run its course as people come to be dependent on it. As a result, individuals with a predominant obsessive passion run the risk of experiencing conflict with other life domains and negative consequences during and after engagement in the passionate activity" (Lafrenière et al., 2011, p. 145).

**Physical activity**: "any form of bodily movement performed by skeletal muscles that result in an increase in energy expenditure" (WHO, 2018, p. 100).

**Positive affect**: "refers to the extent to which an individual subjectively experiences positive moods such as joy, interest, and alertness" (Miller, 2011)

**Self-Determination Theory** (SDT) (Deci & Ryan, 2000; Ryan & Deci, 2000): A theory, profoundly based on the satisfaction of needs and self-determined motivation to explain human behaviour. SDT contains several mini-theories (see for example: http://selfdeterminationtheory.org/theory).

**Sport**: "all forms of physical activity which, through casual or organised participation, aim at expressing or improving physical fitness and mental wellbeing, forming social relationships or obtaining results in competition at all levels" (Council of Europe, 2001).