EUROPEAN HANDBOOK FOR GENDER EQUALITY, EQUITY, INCLUSION IN SPORT: A PERSPECTIVE THROUGH THE ERASMUS + WOMEN-UP PROJECT

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CHAPTER 8: PHYSICAL ACTIVITY AND MENTAL HEALTH: EXAMINING THE LINKS BETWEEN EXERCISE, PHYSICAL ACTIVITY, AND MENTAL HEALTH OUTCOMES SUCH AS STRESS, ANXIETY, AND DEPRESSION

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1. INTRODUCTION

Psychology has been an area of great relevance in the study of sport and physical activity. So much so that prior to 1900 the mind-body relationship began to be considered as a determining factor in the practice of physical activity, this stage being considered as pre-history. Later, between 1920 and 1930 the term "sport psychology" was developed as a specialty. From 1940 to 1960 there was a change of mentality that led to the preparation of a specific discipline, establishing psychology programs for the practice of physical activity that would allow the education of physical trainers. From 1960 to 1970, sport psychology was established as an academic discipline, which was an event of great relevance for the field. This stage was followed by a practical scientific development of sport psychology from the 1970s to the 1990s, which gave rise, from the 2000s onwards, to a contemporary stage of sport and exercise psychology that extends to the present stage (Gould y Voelker, 2014).

Nowadays, there is growing concern about the deterioration of mental health, especially in countries with a high level of economic development (Hewlett, 2016; Lopez et al., 2006), even more so in view of the vast psychosocial impact of the COVID-19 pandemic on the world population (Santomauro et al, 2021). Evidence from numerous adult population-based studies has shown that physical activity can have a positive impact on mental health and can be used as a therapeutic intervention strategy for the treatment of mental disorders (Dale et al., 2019; Milne-Ives et al., 2020; Pascoe et al., 2020; Violant-Holz et al.,2020).

Increased anxiety is frequently encountered, especially in stressful life situations. However, excessive and persistent levels of anxiety and worriedness that are difficult to control and interfere with daily activities may be a sign of generalized anxiety disorder. It usually begins during adolescence or young adulthood. Symptoms may improve or worsen at different stages and are often aggravated in times of stress. Stubbs et al. (2017) found that the overall global prevalence of anxiety was 11.4% in 47 countries, and that low levels of physical activity are associated with a higher prevalence of anxiety. Likewise, the prevalence of low physical activity in people with anxiety was higher than in people without anxiety. In addition, participation in moderate to vigorous physical activity for prolonged periods (weeks or months of regular physical activity) reduces anxiety symptoms in adults and older people (Department of Health and Human Services, 2018).

Depression is another common mental disorder that can have a significant impact on an individual's well-being and daily functioning (Kessler, 2012). It is estimated that 5% of adults worldwide suffer from

depression. Depression is characterized by persistent low mood, psychological disturbances, motivational problems, and a range of other symptoms, from psychomotor to cognitive alterations (American Psychiatric Association, 2013). It is assumed that 3.8% of the population experiences depression, including 5% of adults (4% of men and 6% of women) and 5.7% of adults over 60 years of age. Around the world, approximately 280 million people suffer from depression. Depression is about 50% more common among women than men. Globally, more than 10% of pregnant women and women who have just given birth experience depression (Woody et al., 2017). There are numerous studies aimed at demonstrating the impact of physical activity on depression (Rodríguez-Romo et al., 2015). While most of these studies have confirmed an overall positive relationship, they have also identified possible moderating variables, such as age, gender, level of physical activity or sport practiced.

Regular physical activity not only prevents these health problems, but also improves quality of life (Department of Health and Human Services, 2018). According to WHO (1994), quality of life is a wide-ranging concept that is complexly interwoven with a person's physical health, physiological state, level of independence, social relations, and relationship with their environment. It is therefore a psychological construct related to an individual's subjective perception of their overall satisfaction with life. There is strong evidence from adults that the perceived quality of life improves with regular physical activity (Department of Health and Human Services, 2018). In addition, positive relationships between physical activity and several indicators of quality of life have been described (Joseph et al., 2014) such as self-efficacy of exercise, physical self-concept, and self-esteem (Elavsky et al., 2005).

In addition to the existing relationship between the practice of physical activity and different variables related to adequate mental health, it is important to highlight the relationship of both with other areas of health. Thus, previous research has shown how a worse psychological state is related to a greater addictive use of new technologies, which in turn is related to less physical activity and a worse nutritional state in females, with problematic use of the mobile phone being especially relevant (Mateo-Orcajada et al., 2023). In this sense, it should also be noted that the practice of physical activity has been shown to be beneficial for social interaction with peers, increasing the feeling of belonging to a group. This is fundamental and becomes relevant when considering that subjects with large amounts of social interaction tend to have less stress (Ono et al., 2011).

The differences found in this area show differences according to gender, which is a relevant issue. Thus, the practice of physical activity is associated with better mental health, but only in non-bullied sexual youth (Kirkewski et al., 2023), which should be considered in programs to promote physical activity in sensitive populations. In addition, females have lower physical activity than males, as well as poorer mental health. However, the strength of the positive relationship between mental health and physical activity practice does not differ by gender (Halliday et al., 2019). Therefore, the practice of physical activity seems to partially explain the gender difference in mental health, which is a relevant issue because of its potential to influence global health, but an in-depth approach to the aspects that may be most relevant is needed.

In this context in which the practice of physical activity and mental health are related, and in which this relationship affects other relevant aspects for the healthy development, but some of the most determining factors are still unknown, this chapter aims to explore the relationship between physical activity and mental health, and to assess whether this relationship varies according to the level of physical activity and the domain in which it is performed.

2. SCIENTIFIC BACKGROUND

The practice of physical activity provides psychological and physiological benefits to its participants, including the synthesis of hormones such as serotonin, which, due to its catalytic anti-stress function (Tajik et al., 2017), favors adequate mental health (Hale et al., 2021). The importance of serotonin lies in the fact that it is a neurotransmitter closely related to the control of emotions and mood, participating in the control of anxiety, fear, anguish, or aggression. This aspect is relevant because the rate of mental disorders such as anxiety, depression or stress has increased exponentially in recent years (Daniali et al., 2023), becoming a real problem for public health.

Comparative studies over the last 20 years justify this evolution of mental disorders by looking at emotional difficulties, behavioral problems, hyperactivity, or problems with peers (Patalay & Gage, 2019). In contrast, behaviors that were previously considered as problematic, such as substance use, sexual activity or antisocial behaviors were less frequent over the years (Patalay & Gage, 2019). In addition, behaviors have worsened over time, with the population's rest time being less, body mass index increasing, and self-perception of oneself being worse, with all these factors being related to worse mental health (Patalay & Gage, 2019). Even aspects of the environment, such as increased urbanization in recent decades

(Srivastava, 2009), or school stress (Högberg et al., 2020), have been shown to be influential on mental health, increasing the number of mental disorders.

Added to these differences, previous research has shown differences in the mental health status of males and females, with females being more affected, reporting higher levels of depression, anxiety and stress compared to males, especially in Europe (Daniali et al., 2023). This becomes even more important if one considers that aspects such as school stress, incidence of depression or level of physical activity practice also differ between males and females at all ages, with females being less active (Emmonds et al., 2023) and more prevalent to suffer from stress and depression, which may explain about half of the growing gender gap in psychosomatic symptoms (Högberg et al., 2020).

This is due to the fact that gender stereotypes are still present in sport, with the vast majority of sports being considered masculine, and the participation of females in them being reduced (Mateo-Orcajada et al., 2021). In this research, adolescents were asked whether they considered certain sports as masculine or feminine, and the results varied according to gender. Therefore, despite the fact that the practice of physical activity is a determinant for mental health, mainly in females, which allows them to reduce psychological differences with respect to males (Mateo-Orcajada et al., 2022), primarily in the satisfaction of basic psychological needs (competence, autonomy, and relatedness), the level of practice is limited, and the benefits are very small.

In addition to the differences in the level of sports participation, and the effects this has on mental health, differences are also found in the psychological state of males and females during sports practice, as well as in the ability to psychologically cope with sporting events. Thus, it has been observed that female athletes, mainly those of individual modalities, present greater competitive anxiety (Correia & Rosado, 2019), understood as the anxiety that arises in the sports context, including training and competition, compared to males and athletes of collective sports. In this study, competitive anxiety before training was assessed in young athletes of different individual and team sports by means of the SAS-2. In the face of an injury process, females show a good balance between internal and external locus of control, the internal locus being understood as the person's belief that she has control over what happens, while the external locus refers to the person's belief that it is elements external to her that determine what happens (Figure 1); value support systems very positively; and control their emotions during the recovery process, but are highly influenced by the fluctuations of the process, compared with males (Lisee et al., 2020). During this investigation, young males and females who had a previous history of anterior cruciate ligament rupture that had undergone surgery with anterior cruciate ligament reconstruction were evaluated. They were interviewed before doctor clearance to return to activity. Similarly, in sports involving weight control, females show a high total mood disturbance score, with significant changes in anger and depression, generating high psychological stress around this event (Yoshioka et al., 2006). This study was carried out with judokas, comparing those who needed to reduce their weight before a competitive period with those who did not, assessing mood and total mood disturbance. An aspect that is also of great relevance is that females during the menstrual cycle present fluctuations in their psychological state, for example, an increase in distractions, fluctuating emotions, and a decrease in motivation during menstruation (Findlay et al., 2020).

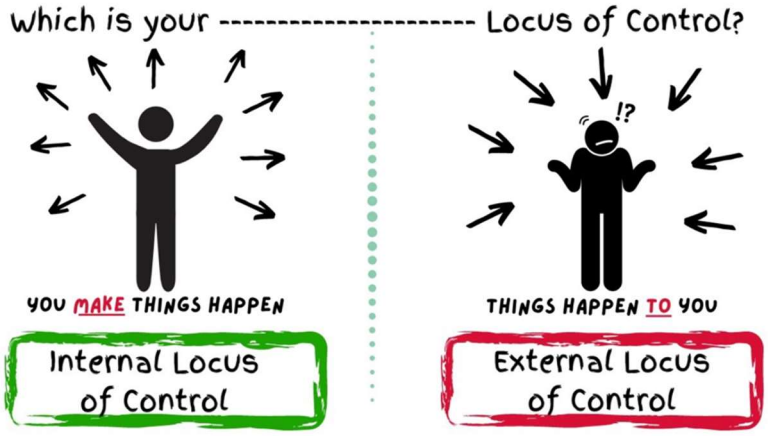

Figure 11 – Differences between internal and external locus of control. Source: Eyal (2022).

Therefore, in the field of physical activity and sport, the psychological response of males and females differs in each of the relevant events, but in addition, females report facing more adverse events related to the sporting environment during their time as athletes (Walton et al., 2020). Thus, females make special mention of interpersonal conflicts, economic difficulties, and discrimination, which, together with the abuse of social networks, are factors that predispose female athletes to more mental health problems compared to males (Walton et al., 2020).

This situation leads to notable differences between males and females in the sports environment, which negatively affects the psychological state of females. This results in negative consequences such as the premature abandonment of sports practice by females (Baron-Thiene & Alfermann, 2015), with the disadvantages this entails for health. The current situation in the sports context calls for future research that continues to examine the differences between males and females, mainly analyzing the psychological response to different events. This would allow the design of specific psychological interventions for females that would be of great relevance to reduce the differences between both genders, decreasing the negative effects and the premature abandonment of females in the sports environment.

3. TECHNICAL INFORMATION

Based on previous research of relevance in the field of sport psychology, the instruments and procedures that may be relevant to assess the psychological state of males and females who practice sport are presented in this section, favoring that the interventions to be carried out include valid and reliable instruments.

Motivation is one of the most determinant variables in this area, since it is related to the abandonment and intention to practice sports (Back et al., 2022), so the instruments available for its evaluation are numerous. Motivation refers to reasons that underlie behavior that is characterized by willingness and volition. Intrinsic motivation is animated by personal enjoyment, interest, or pleasure, whereas extrinsic motivation is governed by reinforcement contingencies. Thus, the critical review by Clancy et al. (2017) shows that the Sport Motivation Scale (SMS), the Intrinsic Motivation Inventory (IMI), the Situational Motivational Scale (SIMS), the Perceptions of Success Questionnaire (POSQ), the Behavioural Regulation in Sport Questionnaire (BRSQ), and the Task and Ego Orientation in Sport Questionnaire (TEOSQ), are six psychometrically strong questionnaires to quantify motivation. However, IMI seems to be the most widely used in previous scientific literature, and SMS is the least used of the six mentioned. The use of these scales is prior to sports practice. Some examples of the use of these scales would be: the SMS is composed of 28 items that measure 7 types of motivation (intrinsic motivation toward knowledge, accomplishment, and stimulation, as well as external, introjected, and identified regulations, and amotivation). Each scale is rated by 4 items assessed on a 7-point scale. The IMI measures 6 subscales (interest/enjoyment, perceived competence, effort, value/utility, felt pressure and strain, and perceived choice in performing a given activity), with the interest/enjoyment subscale being considered the self-report measure of intrinsic motivation. This scale has more items than the other subscales. It is completed on 7- point scale. Or the BRSQ allows the assessment of 9 dimensions (intrinsic motivation towards knowledge, in general, achievement and stimulation, as well as external, introjected, identified, and integrated regulations and motivation) with a 7-point scale.

With the aim of assessing the individual athlete's response to training and competition, there are numerous instruments that can provide valid and reliable data to measure mood states, emotions, perceived stress and recovery, and sleep quality, including the Profile of Mood States (POMS), the Emotional Recovery Questionnaire (EmRecQ), the Total Quality Recovery (TQR) scale, the Daily Analyses of Life Demands for Athletes (DALDA), the Recovery-Stress Questionnaire for Athletes (RESTQ-Sport), the Acute Recovery and Stress Scale (ARSS), the Short Recovery and Stress Scale (SRSS), and the Multi-Component Training Distress Scale (MTDS) (Nässi et al., 2017). The use of these scales is prior to sports practice. Some examples of the use of these scales would be: the POMS questionnaire assesses 6 mood states (anger, depression, tension, fatigue, vigor and confusion) by means of 48 items completed on a scale of 0 to 4 points. All the dimensions have a negative connotation, so the higher the score, the worse the state of the athlete, except for the vigor dimension, which is positive. Or the REST-Q Sport, composed of 76 items (28 sport-specific and 48 non-sport-specific) distributed in 19 scales (7 non-sport-specific stress scales, 5 non-sport-specific recovery scales, 3 sport-specific stress scales, and 4 sport-specific recovery scales). The form of completion is based on a Likert scale from 0 to 6 points.

According to previous research developed, psychological interventions have been shown to be effective in the sport setting to reduce cognitive, somatic, and competitive anxiety, as well as to increase self-confidence and improve stress management in relation to performance evaluation, with effect sizes

from small to medium (Olmedilla et al., 2019; Ong et al., 2021). Another real example of the usefulness of these interventions was the case study conducted with the All Blacks rugby team in which the motivational climate created during a season in which they won the Rugby World Cup was examined. This study identified eight key aspects of motivation and motivational climate between 2004 and 2011 (critical turning point, flexible and evolving, dual-management model, "better people make better all blacks", responsibility, leadership, expectation of excellence, and team cohesion). Recommendations for other coaches of elite teams are derived from this study (Hodge et al., 2013). However, the type of design, the components of the intervention and the duration of the intervention are relevant aspects that should be considered in the approach. These investigations are some examples that through a well-designed psychological intervention and using valid and reliable instruments for its measurement, the psychological response of athletes to the different situations of training and competition can be favored, being this especially relevant for their performance and continuity in practice. Thus, Figure 12 shows some types of intervention and the effects they can produce on certain psychological variables.

Despite the valid and reliable instruments available in previous scientific literature, as well as the intervention protocols developed, it is important to highlight some aspects that may limit the psychological evaluation of male and female athletes. The exclusive use of questionnaires provides limited information on the psychological state of athletes, so it is necessary to complete the evaluation by means of structured or semi-structured interviews. The use of questionnaires cannot be systematic for all athletes, since it will depend on the characteristics of the athlete, as well as the sport context and what is to be analyzed. The completion of questionnaires is always conditioned by the bias of social desirability, an aspect of great relevance in the psychological field by which athletes can answer what is socially well regarded, although it is not really what they think. And, as for the person in charge of providing and evaluating the questionnaires, he/she must avoid influencing the response of the subjects, as well as making a biased evaluation of the results.

Type of psychological intervention	Effect on athletes
Educational intervention	- - resistance to collaborate - anxiety - depression + self-confidence
Goal setting	+ + treatment motivation and satisfaction + + self-confidence - anxiety
Imagery for performance	+ + self-confidence + + sport skills + + muscular activation (circulation)
Imagery for rehabilitation	- - anxiety + + coping strategies - - stress - - muscular tension
Self talk based intervention	- - negative cognitions - depression - anxiety
Biofeedback	+ + self-confidence - - negative cognitions - - anxiety + muscular strength
Social support based intervention	+ + coping strategies + + self-confidence + + treatment motivation and satisfaction - - depression - - anxiety

++ indicates a strong increase
+ indicates a minor increase
- indicates a minor reduction
-- indicates a strong reduction

Figure 12 - Influence of different types of intervention on psychological variables.

Source: Santi & Pietrantoni (2013).

In addition to the research shown in this section of the chapter, more information on psychological studies conducted in the field of physical activity and sport can be found in the scientific background section. These studies show the differences between individual and team modalities in competitive anxiety

(Correia & Rosado, 2019), the importance of the psychological recovery process in injuries (Lisee et al., 2020), or the influence of the weight loss process in certain modalities that require it and how this influences the psychological domain. In addition, the following sections of this Handbook show some pedagogical aspects that are related to the mentioned interventions and that may be useful for the implementation of certain programs.

4. PEDAGOGICAL GUIDANCE

4.1. Guidance for teaching or learning the topic

4.1.1. Teaching Methods

The pedagogical guidance presents a teaching method of shared discovery learning using technologies and different groupings. Activities are proposed in which the resources provided must be explored, with a subsequent sharing and final reflection. This is only a teaching proposal since other methods such as case studies or simulations could be used and will be developed throughout this section.

4.1.2. Learning Objectives

a) To investigate the benefits of physical activity on mental health disorder; b) to learn how measuring changes in mental health and wellbeing; c) to describe tips and tools for the improvement of mental health; d) to learn about worldwide recommendations for physical activity; e) to reflect on the different experiences of athletes who have presented mental unhealthy and how they have solved them.

4.2. Suggested educational resources or activities

4.2.1. Educational Resources

In this section, first of all, an example is proposed for the method of shared discovery learning using technologies and different groupings. It is proposed that learners work in different groupings to try to answer the questions posed. For each question, it is proposed to search in different resources that students can find in Table 10.

- Task 1. Work in pairs. Consult all the resources listed and agree with your partner on which are the 5 greatest benefits of physical activity on mental health disorder.
- Task 2. Work in groups. Create a decalogue for the improvement of mental health. To do this, you should consult the resources listed, select the 10 best tips, advice, or tools and, using new technologies, create a visually attractive poster.
- Task 3. Exercise to connect and center yourself.

Stress means feeling worried or threatened by life. Sometimes this stress is due to major threats, but sometimes it is due to smaller problems. A high level of stress often has an effect on the body (headache, lack of hunger, lump in the throat, muscle tension, upset stomach, backache...) and is reflected on an emotional level (worry, anger, guilt, sadness...). All of this can lead to becoming "hooked" on difficult thoughts and feelings. For example, one moment a person may be enjoying an everyday situation, and the next moment they may become "hooked" on thoughts and feelings of anger or sadness. These thoughts and feelings cause them to move away from their values, where values are understood as the deepest desires of what kind of person they want to be (caring, sensible, attentive, committed, persevering, responsible, calm, nurturing, protective, courageous...). This detachment can lead to undesirable behaviour. To combat this, it is necessary to refocus on the activity that was being carried out in order to reconnect with the activity. Paying attention to the activity, the environment, the people, or actions present helps to re-engage. Focusing on all the details provided by the five senses is the key. Look, listen, taste, smell, and touch.

Now, think of a time when you got hooked on a thought and feeling and try to answer the following questions: Did you feel any of the following symptoms: headache, rapid heart rate, butterflies or tingling in your stomach, sweating, blushing, rapid breathing...? What was the thought you had? What feeling did it give you? How could you have dealt with it?

- Task 4. By consulting the resources listed, you should try to answer the following true or false questions. Once you have finished, discuss them with your classmates. At the end of the activity, a debriefing will take place.

1. The World Health Organization (WHO) recommends that children and adolescents get at least 60 minutes of vigorous physical activity every week.

2. Older adults should perform at least 2 days of muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups.

3. Adults should engage in a minimum of 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity or an equivalent combination of the two according to the WHO.

4. WHO recommends a minimum of 3 days per week of vigorous physical activity as well as those that strengthen muscle and bone should be incorporated for children and adolescents.

5. Adults should perform at least 3 days of muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups.

Solution to questions: 1: False; 2: True; 3: True; 4: True; 5: False.

- Task 5. Access the following article published in the global publication Insider which tells the story of numerous athletes and their mental health stories. Then choose one of the athletes and read their story. Research more about the athlete's story.

Explain to the other learners what happened to him/her and how he/she managed to overcome it. Did he/she seek help?

- Task 6. We all need to take care of our physical and mental health. Once you have read and researched all the documents and resources shared, list three things you can do to take care of your physical health and three things you can do to take care of your mental health.

Table 10 - Resources for the task and more information.

Description	Link	Task
National Health Service (NHS) in England. Self Help Leaflets	https://web.ntw.nhs.uk/selfhelp/	1
NHS. Benefits of exercise	https://www.nhs.uk/live-well/exercise/exercise-health-benefits/	1
Mind Charity. Physical activity and your mental health	https://www.mind.org.uk/media-a/2934/physical-activity-and-your-mental-health-2019.pdf	1-2
WHO. Doing What Matters in Times of Stress	https://www.who.int/publications/i/item/9789240003927?gclid=CjwKCAjwsvujBhAXEiwA_UXnANFquk6lWE-uJVLPPqb1xAeMbdsMuK2hSssEy-8hOse7v3rrL_QMrhoCqKQQAvD_BwE	2
WHO. Teacher´s Guide to the Magnificent Mei and Friends Comic Series	https://www.who.int/publications/i/item/9789240026261	2
5 ways to get moving and feel better (video)	https://www.youtube.com/watch?v=M4p6TddpHSg	2
Mental Health Foundation. How to look after your mental health using exercise	https://www.mentalhealth.org.uk/sites/default/files/2022-07/How-to-exercise.pdf	1-2
Mind Charity. Mental Health and Physical Activity Toolkit	https://www.mind.org.uk/about-us/our-policy-work/sport-physical-activity-and-mental-health/resources/mental-health-and-physical-activity-toolkit/	2
Payment course. 2023 Summit – Exercise Prescription for Mental Health	https://members.acsm.org/ItemDetail?iProductCode=IHFS23IV06	1-2
American College of Sport Medicine (ACSM). Mental Health	https://www.acsm.org/education-resources/trending-topics-resources/mental-health	1
World Health Organization (2020). Guidelines on physical activity and sedentary behaviour	https://www.who.int/publications/i/item/9789240015128	4
Insider. Articles on athletes and mental health	https://www.insider.com/olympic-athletes-talk-about-mental-health-2021-7	5

Another possibility for the development of this section would be the work based on case studies. For this purpose, the teacher will provide the students with different case studies, real or fictitious, that present some type of psychological alteration in the sports environment (lack of motivation, difficulty in controlling stress, competitive anxiety, among other possibilities) on which they will have to work. The approach to the cases will be carried out in small groups (3-4 participants), which will try to respond to the proposed aims.

First of all, the teacher will present each group with a video presentation of the subject in question, with which an initial evaluation will be carried out, including the analysis of the athlete's behavior, the antecedent situations that can provoke this behavior, the consequences, and the stable characteristics of the athlete. Among the aspects to be evaluated are situations outside of training and competition that may

be stressful, the demands of training and competition, situations associated with injuries or other stressful aspects such as appearances in public or in front of the media.

In addition, an evaluation of the subject's relevant personal variables should be carried out, considering the resources and abilities to control stressful situations, in order to determine the particular needs of the case under study. For this purpose, different instruments can be used, such as those mentioned in the technical information section, or others such as the resilient personality questionnaire (EPR), the state-trait anxiety questionnaire (STAI-R) or the questionnaire of psychological characteristics related to sports performance (CPRD). Once the instrument for the initial assessment of the subject has been selected, it should be justified why this instrument is used instead of others (it should be justified based on the age, the sport and social context, the variables to be analyzed, among other factors).

Subsequently, the teacher will provide a new video of the athlete, but in this case, it will be in a real game situation in which the athlete is not able to control the situation. From this second video the students must evaluate the manifestations and consequences of stress. For this purpose, an instrument such as the one in Table 11 can be used to record what the athlete does, what situation precedes it and what happens afterwards.

Table 11 - Recording sheet to evaluate the manifestations and consequences of stress.

Nº	What does the athlete do?	What is the preceding situation?	What happens immediately after?

Subsequently, the resources available to the athlete to face the stressful situations of training and competition should be assessed and based on this evaluation, the necessary modifications and new strategies that should be acquired should be indicated. To do this, it is essential to assess the athlete's willingness, resources, support, and time available to participate in an intervention.

It is essential at this point to assess the feasibility and the procedure for action, indicating the limitations of the evaluation itself. It is not possible to think of an ideal assessment that is not feasible to carry out. It should be concise and not too ambitious. The data must be reliable and for the benefit of the evaluation and subsequent intervention.

Once the intervention has been completed and the athlete's needs have been established, the direction of the psychological intervention should be indicated. For this purpose, there are four main areas that can be addressed and from which the students should choose one according to the evaluation carried out: modification of the athlete's behavior; elimination of potentially stressful situations; control of the negative consequences of the behavior; and modification of the athlete's stable characteristics. For each of these areas a different approach is required, and the instruments to be used in each of them are very different. For example, if the aim is to strengthen control over stressful situations, preventing training and competition difficulties, future performance can be prepared by means of a competition plan (Figure 13) or improving competition conditions by means of a self-recording for relaxation practice (Table 12). All this can be accompanied by different psychological strategies such as cognitive restructuring, self-instruction training or the establishment of aims and time management, among others, which will allow the athlete to cope with different situations.

In this case, the evaluation of the case study and the intervention proposal can be carried out by the teacher who is in charge of providing the material (videos) and guiding the students during the process, or by the rest of the students who present their respective cases. A rubric such as the one in Table 13 can be used for this purpose. This is a simple instrument with which the work done can be elaborated. The presence of each of the items of the rubric during the presentation will award one point, while the absence will contribute none. Thus, the score will be established from 0 to 10 points.

Another possibility would be the use of electronic resources such as Kahoot. Thus, the group in charge of presenting the case study could prepare a series of questions to the rest of the groups through which to evaluate whether they have correctly understood the proposed approach to the specific case.

COMPETITION PLAN			
Sport :	**Category:**	**Date**	**Player:**
Competition:	**Importance of competition in the season (0-10):**		
How do I want to compete?			
Priority aims	**Action plans**		
What possible difficulties may I encounter during the competition?			
1.			
2.			
3.			
For each of these difficulties, what alternative plan do I have prepared?			
1.			
2.			
3.			

Figure 13 - Competition plan

Source: Own elaboration.

Table 12 - Self-report for relaxation practice.

1. No tension	2. Some tension	3. Quite tense	4. A lot of tension	5. High tension
			Before relaxation	Score:
			After relaxation	Score:
Positive feelings:				
Negative feelings:				

The importance of this practice with students lies in the fact that they themselves are able to carry out a behavioral assessment of the athlete, establishing the key points that need to be improved, and proposing an intervention according to the athlete's needs.

Table 13 - Rubric for the evaluation of the case study presented.

Item	Yes	No
The initial assessment includes analysis of the athlete's behavior, the antecedent situations that may provoke that behavior, the consequences, and the stable characteristics of the behavior.		
The initial assessment includes non-training and non-competition situations that may be stressful, the demands of training and competition, injury-related situations, or other stressful aspects such as public or media appearances.		
In addition, the relevant personal variables of the subject are analyzed, considering the resources and skills to control stressful situations.		
At least one instrument used is described.		
The choice of the instrument used is justified.		
The consequences and manifestations of stress are evaluated.		
At least one instrument used for the assessment of stress manifestations is indicated.		
The resources available to the athlete to cope with stressful situations are assessed.		
The feasibility of the proposal is assessed, and possible limitations of the proposal are indicated.		
The direction of the psychological intervention is established and is consistent with the initial assessment performed.		
Total score		

Similar to the case studies, simulations could be carried out in which a student acts as an athlete who undergoes the initial assessment. In this case, this student must complete the questionnaires and instruments used according to a previously defined context. Finally, an intervention on this subject will be proposed.

There are numerous possibilities offered to work in the psychological field in relation to physical activity and sports, but an adequate initial evaluation is necessary to establish the path and order of the procedures.

5. CONCLUSIONS

In conclusion, mental disorders such as anxiety, depression, and stress have been increasing exponentially in recent years, posing a significant problem for public health and the practice of physical activity provides psychological and physiological benefits, including the synthesis of hormones like serotonin, which has an anti-stress function, favoring mental health. In addition, the practice of physical activity is related to mental health, since subjects with a higher level of sports participation have lower levels of anxiety and stress, as well as a lower incidence of mental disorders. Depending on gender, females tend to report higher levels of depression, anxiety, and stress compared to males, especially in Europe. This is partly influenced by lower levels of physical activity practiced by females due to gender stereotypes and limited participation in sports. Therefore, the practice of physical activity seems to partially explain the gender difference in mental health, which is a relevant issue because of its potential to influence mental health. This gives rise to a strong relationship between the practice of physical activity and mental health in both males and females.

In the athletes' context, the psychological response of males and females differs in various sporting events, and females often face more challenges that negatively affect their psychological state and may lead to premature abandonment of sports practice. In addition to this, females face more adverse events related to the sporting environment, such as interpersonal conflicts, economic difficulties, discrimination, and abuse on social media, which predispose them to more mental health problems compared to males. Furthermore, female athletes, particularly in individual sports, exhibit greater competitive anxiety, fluctuations in psychological state during the menstrual cycle, and high psychological stress related to sports involving weight control.

Psychological interventions have shown effectiveness in reducing anxiety and improving stress management, self-confidence, and performance evaluation in athletes. Valid and reliable instruments are available to assess motivation, mood states, emotions, perceived stress, and recovery. Questionnaires have limitations in providing a comprehensive evaluation of athletes' psychological state, and additional methods like interviews may be necessary. Social desirability bias should be considered while interpreting

questionnaire responses. There is a need for further research to understand the psychological response of athletes to different situations and develop specific interventions to reduce gender differences and improve mental health outcomes.

Finally, pedagogical guidance is provided for teaching and learning about the benefits of physical activity on mental health, measuring changes in mental health and wellbeing, tips for improvement, and worldwide recommendations for physical activity. Activities involving research, group work, and reflection are suggested for learners.

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7. ASSESSMENT QUESTIONS

1. When did the term "sport psychology" develop as a specialty?

a) Pre-1900s

b) 1920-1930

c) 1940-1960

d) 1960-1970

2. What is the relationship between physical activity and mental health?

a) Physical activity has no impact on mental health

b) Physical activity can have a negative impact on mental health

c) Physical activity can have a positive impact on mental health

d) Physical activity is only beneficial for physical health, not mental health

3. What is the prevalence of anxiety globally?

a) 5% of adults worldwide suffer from anxiety

b) 11.4% of the global population experiences anxiety

c) Low levels of physical activity are associated with a higher prevalence of anxiety

d) The prevalence of low physical activity is higher in people with anxiety

4. What is the estimated global prevalence of depression?

a) 3.8% of the population experiences depression

b) 5% of adults worldwide suffer from depression

c) Depression is about 50% more common among women than men

d) Approximately 280 million people suffer from depression worldwide

5. How does physical activity impact mental health?

a) Physical activity increases the risk of mental disorders

b) Physical activity is unrelated to mental health

c) Physical activity promotes the synthesis of hormones like serotonin, which benefits mental health

d) Physical activity worsens mental health symptom