



SPORT SCIENCES IN THEORY AND PRACTICE

**Editor:
Prof. Dr. Mehmet ULUKAN**



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Chapter 1

The Relationship Between Sleep and Athletic Performance

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Introduction

Quality sleep essentially provides the support that is needed for the repair and building up of muscles; these are basics in the enhancement of performance among athletes. The functions carried out by the body processes are critical for muscle recovery during sleep, leading to the release of such hormones as growth hormones. The hormones play a vital role in repairing damaged tissues and building muscles for strength and endurance among athletes over a prolonged time period (Venter, 2012). Furthermore, due to downtime, sleep allows the muscles to rest after strenuous physical activities; therefore, athletes will be at their best during further training sessions (Charest & Grandner, 2020). This is because the recovery and growth of muscles were compromised by inadequate sleep, thus affecting the general performance of athletes.

Promotion of sleep towards injury prevention is such an all-encompassing approach; rest is one of the major components that play a role in lowering the likelihood of a sports injury. It is noted that problems of sleeping increase the risks of injuries in athletes because they impair coordination together with reaction times and general physical performance ((Chennaoui et al., 2021). Proper sleep allows the body to bring about optimum cognitive and physical function, reducing the possibility of any accidents or injuries during training or competitions (Huang & Ihm, 2021). Moreover, sleep plays a role in regulating the inflammatory response; therefore, chronic injuries do not occur, and athletic health is good for the long term. As such, considering the gravity of sleep can also be called a part of the athlete's injury prevention strategy.

The relationship between sleep quality and recovery time is profound. High-quality sleep is associated with a more expeditious recovery process from physical activity. High-quality sleeper athletes have more efficient recovery processes and therefore get back to training with much less downtime (Doherty et al., 2021). This means that good-quality sleep improves the rate at which the body repairs tissue and refills energy stores, which are critical in recovery from strenuous exercise. Thus, athletes maintaining restorative sleep will in all likelihood be working at their performance peak since they will be able to restore from stressor demands of their sports. This means that concentrating on quality of sleep may well be one, which markedly influences the recovery duration in athletes.

Hormonal Regulation and Sleep

A fundamental concept to consider in learning how rest influences athletic performance is the relationship between sleep and cortisol levels. Cortisol is often labeled the stress hormone, as it is involved in a wide range of physiological activities, such as metabolism and immune reactions. There is coordination between sleep and cortisol; thus, physical activity may have the capacity to impact both levels (Nys et al., 2022). Adequate sleep helps to normalize the levels of cortisol, hence balancing it for optimal muscle recovery (O'Byrne, et al., 2021). This also reduces the risk for stress-related injuries. On the other hand, chronic sleep deprivation in hours could lead to elevated levels of cortisol in the circulation, which hinders muscle recovery rather than supporting athletic performance. (Prat, 2022). Additionally, the relationship between sleep and cortisol extends to cognitive functions such as focus and reaction time, which are essential for peak athletic performance.

An equally important factor in the sleep-performance relationship is the influence of sleep on the release of the growth hormone. Growth hormone is important for the growth and repair of muscles and general recovery from exercise. During deep sleep, production of GH is substantially more especially in slow-wave sleep, which is indispensable for the development and repair of muscle (Zaffanello et al., 2024). On the other hand, it has been noted that sleep deprivation lowers the GH response; in turn, it hampers the potential for athletes to recover from intense physical efforts (Charest & Grandner, 2020). Research findings indicate that sleep loss may stimulate the exercise-induced GH response to a great extent, underlining the role of sleep in GH potentiation (Ritsche et al., 2014). In that way, it may be critical for athletes to provide enough sleep to enable their body systems to carry out an effective process of muscle recovery and growth.

For instance, a positive relationship of performance parameters, such as sprint speed, with testosterone levels has been established in young male athletes (Bezuglov et al., 2023). This again speaks to the actual involvement of the hormone in making an athlete more performant. Thus, the mammoth in ensuring adequate sleep quality sustains optimal levels of the T-hormone that also sustains athletic performance and health.

Sleep Patterns and Training Schedules

Understanding how different sleep cycles impact the efficiency of training is very important for athletes, specifically to maximize performance. Sleep cycles constitute heavy, light, and REM sleep, which nurtures recovery mechanisms and systems of restoration necessary for the actualization of sporting activities (Lopes et al., 2023). During deep sleep, the body repairs the damage done to tissues; it

builds up bone and muscle and strengthens the immune system. Whereas cognitive activities like memory consolidation and regulation of mood depend on adequate REM sleep (Marshall&Turner, 2016). The balance and lengths of these cycles will, therefore, directly influence whether an athlete can train well. For example, a lack of deep sleep may have compromised physical rest, while no REM sleep would hurt the strategic and decision-make cognitvity (Cook&Charest 2023). At least, under the theory, aligning training schedules with sleep cycles should potentiate both physical and mental performances among athletes under meeting specific demands in the sport.

It is strategic, and within the control of athletes for optimizing the quality of sleep, to adjust training times. The circadian preference of sleep/wake times has a profound influence on the circadian rhythm of an individual towards good or poor sleep and its duration as well (Clemente et al., 2021). Athletes who have training at sunrise might have some sleep difficulties that lead them to underachievement. Therefore, by rescheduling the training sessions slowly during the day, athletes could get enough time to sleep and rest, and thus have an enhanced physical and cognitive readiness (Watson, 2017). There could, thus, be the management of training-induced wakefulness by planning times for naps to increase 24-h sleep duration in athletes with incomplete overnight sleep (Cunha et al., 2023). This facilitates recovery and attenuates the impact of overreaching on subsequent athletic performance. This coaching adjustment could thus help the athlete maintain elevated energy during practice as well as enhanced quality and effectiveness in achieving a high level of performance (Hamlin et al., 2021).

Psychological Benefits of Adequate Sleep

The influence of sleep on stress and anxiety management among athletes is profound and multifaceted. A good night's sleep is in itself one of the central means that must be applied to lower stress and manage anxiety issues that often characterize common problems among athletes. Indeed, evidence has shown that athletes who do not enjoy sufficient sleep tend to record elevated anxiety levels, hence having problems dealing with new environments and situations (Kalmbach et al., 2017). This impaired anxiety interferes with concentration and performance, pointing to the role of good sleep hygiene. Furthermore, sleep has been proved to regulate stress hormones (cortisol) in the body; hence, it brings about a feeling of calmness and control. Understanding a bidirectional relationship between sleep and stress can offer valuable insight into improving athletes' mental well-being and overall performance (Vitale et al., 2021).

Sleep is a significant determinant of motivation and mood, the constituents of performance for any physical activity. When athletes have reduced sleep quality,

thereby facing deprivation, it undoubtedly spoils their mood, which automatically lowers their level of motivation and judgment as a consequence (Venter, 2012). Adequate sleep fosters a positive mood, enhancing an athlete's drive to train and compete. This is because the restorative processes that occur during sleep help balance neurotransmitters in the brain, contributing to emotional stability and resilience (Vandekerckhove&Wang, 2017). In this regard, athletes that pay much attention to having enough sleep are more motivated and better braced to stand strong against the strains of training and competing. Correspondingly, the motivational effects of adequate sleep may again serve to whirl the subject into better athletic performance and perpetuation of motivation.

The interaction between sleep and mental fortitude in competitive sports is one of the major, central issues. At first approximation, resilience is the rate at which an individual bounces back from the adversities and difficulties in the course of his or her life and career—something very important, especially when performance under pressure should be one of the main characteristics to consider. Thus, sleep can strongly promote resilience through cognitive restoration and emotional regulation. High-quality sleep on a regular basis, for instance, has been related to increased mental toughness and a better ability to bounce back (Scott et al., 2021). There will, thus, always be enough space and time for memory consolidation and processing new information: athletes can therefore be open to more feedback and manage to change their tactics. In this way, sleep surely seems to be directly added to mental recovery, rather than to recovered physical opportunities, and thus acts as an athlete's foundation.

Sleep and Energy Levels

The relationship between sleep duration and energy availability is gaining much-expected recognition as a key factor in athletic performance. Thus, good sleep regulators among the athletes normally have good energy levels, which directly translates to good training and competitive outcomes (Watson, 2017;Hamlin et al.,2021). Sleep is a source of restoration of both physical and mental resources. So, with adequate sleep, energy availability is maximized since the body has had time to restore its resources. Therefore, energy availability during practice and competition will be maximal. This is supported by the evidence of a positive relationship between increased sleep duration at night to a minimum of eight hours specifically and energy levels and athletic performance (Hamlin et al., 2021). Such findings highlight the importance of prioritizing sufficient sleep to ensure athletes have the necessary energy reserves to meet the demands of their sport.

Sleep loss is such that it impairs endurance, which is an essential aspect of most sports disciplines. Hence, when not resting enough, athletes experience reduced capacity due to a lack of recovery time to restore and replete muscle glycogen, and hence the quality of their performance diminishes (Lopes et al., 2023). This acts as a further enhancer to high ratings of perceived exertion making all exercises seem torturous and exhausting (Bird, 2013). Latest outline of International Olympic Committee also underlines the value of sleep as a key player in holding endurance and entire athletic performance ability (Maxime, 2024). Thus, with such a statement in mind, athletes need to consider sleep as one of the key elemental ingredients to maintain and improve their ability to endure.

It is very important to note that the relationship between sleep and daily levels of physical activity is deep and will have a major effect on how long athletes can keep up and initiate acting upon physical labor within the day. High-quality sleep can keep the physical level going since it allows the systems of the human body to recuperate and be prepared for additional labor (Walsh et al., 2021). Athletes tend to suffer from irregular sleep patterns, resulting in negative effects on their physical performances, which lower their daily activity and increase fatigue (Cook & Charest, 2023). This shows the extent that quality sleep plays in being able to perform at a high level. Improved daily amounts of physical activity directly benefit from more sleep through better physical preparation and recovery, which enhances athletic performance overall.

Sleep and Cognitive Function

Sleep plays a major part in decision-making during an athletic contest in the process of information and speedy judgment by the athlete. Scientific studies prove that inadequate sleep time has negative effects on those cognitive outcomes key components of decision-making performance in a game (Charest & Grandner 2020). Inadequate rest provokes an athlete to insufficiency in the assessment of the situation, choice between the options, and the preference for the right course of action that bears strategic effectiveness that could lead to defeat in the competition. It increases perceived effort, thereby making those cognitive disadvantages make quicker or ill-advised judgments.

Another important area affected by sleep in the performance of athletes is focus and concentration. Quality, and sufficient amount of sleep represent two essential determinants for athletes to be able to maintain their attention throughout prolonged competitions and training programs (Walsh et al., 2020). In this regard, good sleep is basically a condition under which the athlete can concentrate on the complicated task and not lose such a mental resource as effort. Mental fatigue caused by lack of sleep involves more lapses in which the attention

is drawn, namely from athletes toward their physical execution. Accordingly, obtaining sufficient rest is critical to athletes for being able to maintain the mental clarity necessary to best perform.

One of the major factors that reaction time depends on is sleep; evidence has indicated adverse effects of sleep disorder over this vital aspect of athletic performance. Research studies have declared that reaction time is reduced due to the insufficiency of sleep, which instead makes quick responses from athletes accurate enough in a tournament (Choudhary et al., 2016). In sports that depend on split-second decisions, quick reflexes matter the most. When the quality of sleep is affected, athletes might find themselves slow to react—performance in the field or the court could be compromised because of this. Hence, athletes who are going to take certain measures to improve their reactionary ability need to pay attention to their sleep more.

Sleep Disorders and Athletic Performance

Common sleep disorders frequently undermine the restorative processes necessary for peak physical performance amongst which insomnia and sleep apnea prevail. Insomnia features such as difficulty falling asleep or staying asleep may result in daytime fatigue and lack of concentration that would only serve to impair an athlete's cognitive or physical abilities. (Charest&Grandner, 2020). On the other hand, in sleep apnea, there are periodic lapses of breathing during sleep, which results in fragmented sleep and reduces the supply of oxygen to the body. Both can be related to an increase in the risk of injury, reduce healing times, and decrease overall well-being of the athlete. Key for athletes and coaches is knowledge of these conditions because dysfunction can manifest in poor athletic and health outcomes. The affects of insomnia and sleep apnea on athletic performance have a deep impact, range-wised restrictions, physical manifestations leading to coordination deficit, slow reaction time and a fall in endurance in competitors (Charest&Gardner, 2022). Recognizing these impacts underscores the necessity for athletes to prioritize sleep health alongside other aspects of their training regimen.

The management of sleep disorders in athletes should be multifaceted, aiming to improve both quality and quantity of sleep. One of the best would be to initiate a regular sleep-wake schedule, going to ensure regular sleep-wake times so as to enhance quality of sleep (Clemente et al., 2021). Additionally, creating a sleep-conducive environment—such as a dark, quiet, and cool bedroom—can significantly improve sleep hygiene. Incorporating relaxation techniques or cognitive-behavioral therapy can also be beneficial in addressing insomnia by reducing anxiety and stress related to sleep (Rossman, 2019). Patients suffering

from sleep apnea require medical intervention. This may include therapies such as CPAP. By using the strategies described above, athletes will be able to get rid of the sleep disorder's aftereffects, which will be very useful for maintaining high performance and good health.

Nutrition, Sleep, and Performance

The interplay between dietary patterns and quality of sleep is an emerging area of interest, particularly concerning performance. According to evidence, endurance athletes have amplified instances of poor sleep quality, which adversely influences their health and performance (Moss et al., 2022). This relationship is further developed by the fact that healthier dietary choices are related to improved sleep quality, whereas a diet high in processed and free sugars contributes to worse sleep quality (Godos et al., 2021). Such findings bring out the importance of an athlete's diet as an intervention for improved sleep quality and, by extension, better performance. How diet and sleep correlate underpins the integral contribution that nutrition makes toward athletic performance and recovery (Barnard et al., 2022). Improved dietary choices have the potential actually to improve the quality of sleep experienced by the athletes, thus ensuring superior athletic output.

Hydration is also a major factor that affects the quality of sleep and the recovery process in athletes. Adequate hydration helps to keep the body's balance in various physiological aspects that are useful for sound sleep. Athletes need to carefully balance their fluid intake due to specific advice that levels of hydration should be optimal to prevent dehydration, which can induce disturbed sleep and hinder the recovery process (Doherty et al., 2021). Good hydration facilitates the natural response of the body to manage fatigue and enhance general performance. Besides, sleep, nutrition, and hydration constitute an essential part of an athlete's regimen that contribute together to his health and performance levels (Bird, 2013). This, therefore, means that besides being important to their performance, optimal hydration is what guarantees no compromise in the quality of recovery and sleep.

Meal timing is highly relevant in the pattern of sleep, particularly among athletes. Several studies reported an apparent relationship between meal timing and middle-of-the-night awakenings, although the relationship was not identical for the total duration of sleep (Keser&Yüksel, 2024). The circadian rhythm of athletes might be disturbed by food intake too close to bedtime; hence, both the quality and duration of sleep can decrease (Clemente et al., 2021). This might subsequently negatively affect the performance of athletes, thus needing strategic planning in their meals. Hence, athletes consider not just the nutrient content of

the food but also the timing of eating in line with sleep times. This sort of caution may help reduce the disturbances associated with sleep while uplifting a more restorative type of sleep that gears towards improved athletic performance.

Technology and Sleep Monitoring

The wearables have taken athlete sleep monitoring to a whole new level of insight and understanding of how athletes can maximize performance. In this regard, consumer devices such as smartwatches and fitness trackers have become particularly popular with athletes due to their ease of use and availability in the monitoring of sleep quantity and quality (Driller et al., 2023). These wearables record data on different parameters of sleep, including its quality, effectiveness, and interruptions, which could later be examined for adjustments to training and recovery strategies. Athletes will therefore respond in real-time on any information concerning the sleep pattern developmental process in order to identify key performance disruptors and mitigate and manage rest and recovery opportunities. It may perhaps even help them monitor their sleep continuously according to circadian preferences and align their schedules for better sleep quality and, hence, better athletic outputs (Clemente et al., 2021).

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Conclusion

In summary, the complex interplay between sleep and athletic performance further emphasizes the prime importance of rest in an athlete's success. Sleep promotes muscle recovery, prevents injury, and assures energy levels needed for quality athletic execution. More than the support of physiological processes by sleep, cognitive benefits by sleep such as good judgment, attention, and reaction time could crown competitive sports. With the relationship between hormonal

regulation on growth and stress so dependent on the quality of hours slept, athletes will want to pay much more attention to their hygiene if they are to better prepare themselves in terms of mind and body. Treatment of sleep problems should also optimize individual performance by making training schedules coordinate with circadian rhythms. With technology in sleep monitoring, and creating a suitable sleep environment, strategies can work to increase the recovery of athletes. Thus, high-level performance of the overall standard of performance will come to materialize through realizing sleep as a basic pillar in the training of athletes, marred with potentiality to enhance performance in sports and general health.

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Chapter 2

The Effect of Menstruation Period on Physical Performance in Female Athletes

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Introduction

The follicular phase of the menstrual cycle starts on the first day of menstruation and ends at ovulation. In this phase, levels of estrogen are sharply increased, whereas those of progesterone are rather low. So, it is expected that the changes in energy and athletic performance would be due to variations in hormonal status. Estrogen, secreted during the follicular phase, has been reported in numerous studies to positively affect exercise due to its stimulant effects and its anti-fatigue effects (Juillard et al., 2024). Therefore, the rise in estrogen may improve endurance and probably strength, which is a good advantage for female athletes during this phase. Besides, it was hypothesized that with low progesterone, strength-oriented or power-oriented results of greater strength were more likely to permit an optimal window for performance and training (Carmichael et al., 2021). Hence, knowledge of these hormonal fluctuations during the follicular phase would be very necessary for athletes in order to optimize their physical capacities.

The phase marks the middle of the menstrual cycle and is characterized with a surge of luteinizing hormone for ovulation. At this phase in hormonal changes that may significantly affect physical performance. While it is true that the hormonal environment does not critically influence performance, the period between the follicular phase and ovulation represents a time of minor change in physical performance. Some studies even show that variations in hormone levels during the menstrual cycle can cause changes in sports performances; in one part, athletes experience increased vigor, while in another, they feel more fatigued (Yapıcı-Oksuzoglu & Egesoy, 2021). Thus, the impact of the ovulatory phase on physical performance can be of different degrees; therefore, individual training and competitive tactics should be designed considering these hormonal fluctuations.

These hormonal shifts have the potential to significantly involve physical performance. Hence, endurance and strength may be compromised during the development and secretory phases of the menstrual cycle. There is the potential for a decrease in maximal endurance performance during the luteal phase due to noted elevations in body mass and total body water (Julian et al. 2017, Carmichael et al., 2021). This level of change in a physiological manner might inflict the required peak performance expected in an athlete. Therefore, there is a need for all coaches and athletes to make readjustments with the training regimes. While some may have decreased performance levels during this period, some athletes would also feel this to be an advantageous scenario for specific types of training, such as recovery or skills refining.

Hormonal Fluctuations and Athletic Performance

Estrogen relates significantly to the development of muscular strength and endurance; hence, it stands as a prominent factor in athletic performance among sportswomen. In the presence of high levels of estrogen, as usually is the case during phases like the follicular and ovulatory phases of the menstrual cycle, muscle performance is expected to be better. It increases exercise-induced free fatty acid availability for fuel and induces lipid oxidation over other muscular tissues, offering increased energy effectiveness (Carmichael et al., 2021). Thus, periods may tend to be better for female athletes in skeletal muscle-dependent endurance activities. Most importantly, high levels of estrogen in the mid-luteal phase give a further anaerobic powerful and muscle strength-enhancing effect (Oğul et al., 2021). By knowing such hormonal effects, athletes and trainers could arrange training sessions and schedule competitions to maximize the use of these factors for better performances.

Progesterin not only has the potential to impair coordination and balance (two crucial facets regarding athletic performance) because it has sympathomimetic effects increasing heart rate body temperature and respiration but it can also make a person feel anxious about virtually anything even things that formerly seemed to be of no real concern (Hamed-Hamed et al., 2024). The most striking action of progesterone occurs at the luteal phase when it is markedly high; it can disrupt coordination and balance alterations at performance. It has been hypothesized that more substantial and powerful outcomes are achieved when strength and power performance outcomes are palpably lesser with low progesterone, such as in the follicular phase; thus, athletes might experience more optimal performance outcomes during this time (Carmichael et al., 2021). By understanding the effects of progesterone, athletes can better anticipate and adapt to the physiological changes that occur throughout the menstrual cycle.

Another crucial topic to be considered in the effects of hormonal variations, for instance, is the interaction of testosterone with the performance metrics in female athletes. Even though the quantity of testosterone found in females is much less compared to males, it still defines substantial roles in the establishment and strengthening of muscles. This hormone affects the performance parameters of power and dynamic balance. thereby contributing to the overall athletic ability (Castanedo Escalante & Corrales Pardo, 2021). Testosterone acts like a subtle hand throughout the menstrual cycle, which may explain variability but would seem particularly relevant for tasks demanding explosive strength based on short energy bursts. Current evidence now leads us to think that through an inconsistent association with outcomes of power and endurance, for example, there may be more evident fluctuations in interaction between the phases of the menstrual cycle

and performance. In other words, insight into these hormonal interactions could help optimize training regimens and competition strategies for the best results (Meignié et al., 2021). Acknowledging testosterone alongside estrogen and progesterone helps athletes and coaches develop a more complete understanding of performance management at each phase of the menstrual cycle.

Menstruation Symptoms and Physical Activity

Menstruation is adorned with several symptoms liable to cause an inability to develop female athletes' physical performance. Most common symptoms are cramps, or extreme pain within the abdomen, fatigue, and mood swings, similar to those found in women who do exercise ever regularly. These lead to a drastic decrease in energy levels and keep the athletes from keeping up usual intensity in training. These symptoms are widely experienced by more than 90% of regularly menstruating females (Michelekaki et al., 2023). How much such symptoms can affect athletic performance becomes gargantuan because endurance, strength, and motivation for any exercise are impacted overall. Hence, in many circumstances, athletes have to make adjustments to their training in consideration of such an emotional and physical burden during menstruation.

Managing pain and discomfort in training. In order to counteract the debilitating effects of menstrual symptoms, athletes often employ a number of strategies to manage pain and discomfort during training. One of the most common approaches is the use of NSAIDs to decrease cramps and inflammation because they do allow pain-free input from athletes. Moreover, some athletes make certain modifications in lifestyle such as increased hydration, nutritional adjustments, and usage of heat therapy, which can relieve the discomfort. These strategies are very important because they permit an athlete to continue training even in the presence of menstrual symptoms that interfere with their performance (Gopalan et al., 2024). Such proactive measures are not only important for managing pain but also contribute to the mental toughness of an athlete so she feels strengthened to face and compete challenges even during menstruation.

Personalized symptom management plans are highly important in the maintenance of performance levels for female athletes during menstruation. The following management strategies are then likely to be tailored to the individual's specific symptoms and needs with much more assured effectiveness. For example, some athletes would derive more benefits from dietary modifications rather than from physical therapy in place of relaxation techniques. Such individualized plans enable the athletes to articulate the specific symptoms within the context of their training goals and lifestyle requirements and ensure loss of competitiveness during menses (Smith & Orr, 2022). Acknowledging diversity

of experience and need would enable coaches and healthcare providers to meet the varied needs of female athletes thereby better supporting them and helping the athlete to perform at her peak through the entire menstrual cycle.

Influence of Menstrual Cycle on Endurance Sports

Physiological research has intended most of its focus on the female of the species, in particular to track the changes which take place with the menstrual cycle. This is particularly relevant, as lipid metabolism is elevated during certain times of the menstrual cycle and glycogen replacement also exerts a delay effect at these times for certain phases of the cycle and therefore there is the potential for early exhaustion within long-duration events (Carmichael et al., 2021). As a consequence, this shift in metabolism lowers energy, which can make the athlete unable to keep up the previous intensity with their performance. Normally, such a phase is well characteristic, for example, in the mid-luteal phase where a marked fall in maximal endurance performance is noticed because of the fluctuations in hormones that affect energy availability as well as the levels of fatigue (Julian et al. 2017). This requires greater insight into how the menstrual cycle can influence endurance performance and therefore specific strategies that athletes and coaches might consider in relation to managing its effects.

Adaptation strategy is, therefore, required for endurance athletes. This could counteract any effect that the menstrual cycle may have on performance. A more refined approach to planning training activities, which considers hormonal changes, will be fundamental in ensuring that performance is maintained or remains at a relatively constant level. Another adaptation that could be employed is in nutrition by upping the level of carbohydrate consumption when glycogen availability is low to meet energy requirements (Carmichael et al., 2021). Hormonal changes may affect fluid balance, making hydration strategies equally important to maximize endurance capacity. Adequate rest and recovery, pertaining when in the menstrual cycle, could even make overall training far more effective. Tailored approaches like these, therefore, would optimize performance and ensure that athletes gain the least repercussions on performance in endurance sports from their menstrual cycles.

Case studies of performance adaptations across the menstrual cycle in different athletes of varying abilities and sports would be enlightening. Indeed, the overwhelming feeling during the early follicular phase is reported by many athletes as a primary reason for its associated symptoms such as fatigue and general discomfort (Carmichael et al., 2021).. It is also extremely variable from individual to individual and, as such, new methods to address their symptoms specifically and individually need to be developed. Case studies generally reveal

the stoicism and flexibility of athletes as they adjust training to cope with their unique physiological response. That is, the likely experiences that real athletes might have will help turn such stories into practice lessons for scholars and practitioners interested in improving performance among female athletes who encounter menstrual-cycle related challenges.

Menstrual Cycle and Strength Training

The menstrual cycle can actually influence strength and the recovery period of muscles in the context of strength training among female athletes. Under conditions of low progesterone during the follicular phase, women are likely to achieve greater strength and power outputs (Carmichael et al., 2021). This is also a phase that is characterized by high estrogen levels, which in previous studies have been noted to stimulate protein synthesis in the muscles and associated strength gains; hence, it may facilitate recovery from strenuous exercise. Conversely, high-progesterone-marked luteal phase may have fewer attendant benefits regarding muscle recovery and strength increase. Appropriate adjustment of training intensity by female athletes and their coaches in light of such physiological fashions will therefore optimize performance while concurrently reducing injury risks.

Matching the strength training to the cycle would be expected to optimize performance outcomes for female athletes. If anything, the follicular phase is a time to do high-intensity strength training since the levels of progesterone are relatively low (Carmichael et al., 2021). Training at this time might, therefore, harness the increased muscle-building potential steered by estrogen for more effective strength gains. Presumably, therefore, the luteal phase is more appropriate for active recovery or lower loads since, hormonally, the body's environment is not conducive to maximum exertion. Optimally, then, strategic planning of training around these hormonal fluctuations will lead to athletes maximizing their strength development while minimizing adverse effects associated with the menstrual cycle.

Insights from recent studies have bridged gap relations between menstrual phases and strength performance in female athletes. It has been demonstrated that various hormonal imbalances during the menstrual cycle may affect not only physical capabilities but also psychological readiness and perceived exertion (Janse de Jonge, 2003). Such knowledge is highly required when creating long-standing programs of training effectiveness. However, researchers insist that there will be a lot of variations among athletes, thus every subject approach should be highly individualized. With these findings in mind while scheduling the training sessions, the coaches and sport scientists can provide substantial

applied support towards female athletes to optimize their strength training goals while considering broader contest context influences of menstrual health on performance.

Impact on Coordination and Skill Sports

Coordination and precision are dramatically affected by the menstrual cycle in female athletes. Frequent fluctuation in the levels of estrogen and progesterone is a major factor that affects neuromuscular control and joint position sense accuracy in the sports where coordination is highly depending (De Assis Arantes et al., 2023). Low levels of estrogen during the menstrual phase could make JPS less accurate in athletes at the expense of skilled actions dependent on extreme precision. Hormones thus bring about variations in performance since the resultant effect on the ability of the body to maintain movements precise is compromised; hence, there is a call for changes in training as well as competition strategies.

Changes in the dependent-skill sports due to the hormonal shift make most athletes working in skill-based sports make frequent adjustments with their coaching staff to have a balance in their training regimen. Setting the training sessions to correlate with the menstrual cycle phase could make a difference in performance outcomes for the athlete. For example, an increased number of skill sessions planned for the follicular phase due to high levels of estrogen in this phase that improve coordination may be beneficial (Juillard et al. 2024). Conversely, coordination might be downplayed during phases like menstruation. Attention can then be redirected to more technical and recovery-based activities. Such strategic adjustments would serve in the maintenance of a sustained performance level by the athletes at a skill-related manner—hormonal phase, therefore maximizing overall performance.

Testimonies from athletes shed light on how, in practice and competition, there may be some performance effect in relation to menstrual cycle phase. Indeed, most female athletes report conspicuous differences in performance ability across the phases of the menstrual cycle. For example, one study found that some athletes felt their level of coordination and execution of skills was constant throughout the entire cycle, while others said it varied, especially during menses (Ekenros et al., 2024). Within certain individual differences, a significant number of athletes believe their performance is directly affected, hence supported by most research findings that there exists a relationship between hormonal changes and performance. These testimonies underline how important individual differences are in coaching practice, taking into account responses to the menstrual cycle by the athlete (Solli et al., 2020).

Psychological Effects and Athletic Performance

The mood swings and motivation caused by the menstrual cycle may reflect considerable effects on the performance of female athletes. Research argues that due to hormonal imbalance during the menstrual period, there are variations that cause irritation and depression leading factors that reduce morale and motivation levels. It may be difficult for them to sustain their usual intensity and focus during training or competition with mood swings of such magnitude. The premenstrual period is even worse because usually, it comes with more fatigue and worsening performance (Hayward et al., 2024). This phase can present a unique set of psychological challenges that athletes must navigate to maintain optimal performance levels.

To deal with the psychological challenges of menstruation, many female athletes use several coping mechanisms. For example, athletes often self-medicate common symptoms like menstrual cramps and fatigue, which directly reduces the physical discomfort associated and contributing to psychological stress (Findlay et al., 2020). Another method is that female athletes often plan their training around how they are feeling energy and motivation-wise, tending to more strenuous activities during their high times and less strenuous during the down times or when in the menses. Such an adaptive mechanism thus ensures physical performance and, at the same time, mentally burdens less with the demand to perform at an optimum level when circumstances do not fit rest (Niering et al., 2024, Cook et al., 2018).

Psychological resilience, however, is a key factor through which females in sport can successfully navigate any menstrual-cycle-induced performance effects. Indeed, many athletes appear to have developed a certain type of mental resilience that can eventually help them sail through such tough times within the cycle and keep them competitive period (McManama et al., 2021). This very resilience is manifest by studies reporting of significant portions of athletes stating no deterioration in performance even with the presence of symptoms like fatigue and irritability during menses (Michelekaki et al., 2023). This resilience is normally developed with experience and knowledge-about-their-bodies for the athletes to be able to intuit or perceive in advance both the psychological and physiological effects that their menstrual cycle period will come with. This quality contributes not only to performance but also the long-term mental health and well-being period edge (McManama et al., 2021).

Nutritional Considerations During Menstrual Cycle

By meeting the changing hormonal imbalances through dietary adjustments within the menstrual cycle, proper nutrition could significantly enhance

performance for athletes. Among female athletes, it has been recommended that there should be an increase in the intake of complex carbohydrates during the luteal phase. This shall keep energy levels up since the body at this point depends less on muscular glycogen for energy (Holtzman & Ackerman, 2021). Foods rich in iron and vitamin B12 are also important to negate their probable energy loss and to fight the fatigue that normally becomes pronounced around the period. Addition of healthy fats and lean proteins in the diet normally enhances the process by which the muscles are nursed back to health and the energy balance in the body. A healthy balanced diet according to the phases of the menstrual cycle will certainly improve the resultant physical performance, at the same time ensuring the symptoms related to menses are not a limiting factor in the athletic performance (Ayaz et al., 2024, Naraoka et al., 2023).

Hydration and micronutrient uptake act in managing the physiological changes that come with the menstrual cycle and, hence, affect athletic performance. Hormones of the menstrual cycle influence the mechanisms of hydration; therefore, female athletes should take in enough fluids to support performance (Helm et al., 2021). Due to their functions in muscle action and bone health, the levels of micronutrients like calcium, magnesium, and vitamin D requires a surge during menstruation. Maintaining adequate hydration with proper consumption of these focused micronutrients would help the female athlete better handle the stress imprinted by their training and competition schedules, hence minimizing the alteration effects brought about by hormonal fluctuations (Grabia et al., 2024).

Supplements can play a supportive role in managing menstrual symptoms and enhancing performance for female athletes. Omega-3 fatty acids, for example, have been shown to reduce inflammation and alleviate menstrual cramps, which can improve overall comfort and athletic output (Rahbar et al., 2012). Additionally, supplements like vitamin D and calcium can help mitigate mood swings and muscle fatigue, commonly observed during the menstrual cycle (Abdi et al., 2019). However, it is essential for athletes to consult with a healthcare professional before incorporating supplements into their regimen to ensure they are necessary, safe, and effective. When used appropriately, supplements can be a valuable tool in managing menstrual symptoms and supporting peak performance.

Customized Training Programs for Female Athletes

The menstrual cycle should be tracked for the optimization of training programs, particularly in female athletes. Coaches and athletes should comprehend the phases of the menstrual cycle so that they can develop training

regimens that will ensure performance and, most importantly, recovery. Synchronization of physical activities with hormonal fluctuation through such practice permits the expression of maximum athletic performance based on how hormones influence endurance, strength, and other abilities. For example, energy levels may differ between phases of the menstrual cycle and thus have an impact on the effectiveness of training (Carmichael et al., 2021). By tracing these cycles meticulously, athletes could better foresee and, as a result, manage any ill effects on their performance, even coming to more consistent and dependable outcomes in terms of athletics.

Constructing periodization training programs according to the menstrual cycle phase is one way forward in helping develop female athlete performance. The intensity, volume, and type of training should be varied with the level of hormonal change experienced through the cycle. For example, high-intensity strength and power-building training might be well appreciated during periods of rising estrogen levels in the follicular phase. Conversely, the luteal phase may be lightened with more endurance-based training to take into account potential energy and motivation loss (Ekenros et al., 2024). With such periodized plans, peak performance is achieved at the least possible risks of injury and burnout.

Communicating training to athletes and being vigilant about menstrual health will develop a circumstance in which female athletes will be able to generate good performances. Coaches should be ready, prepared, and bold enough to talk about menstrual cycle training as it takes the veil of secrecy off the subject and removes the aura of taboo from it. As a result, the athletes also become free to express what they feel, and hence their concerns. Interaction of this kind informs the coach of what the specific athletes may immediately require and demand in terms of modifying their training. In addition, educated coaches are able to offer adequate useful advice to the athletes to cope with a situation, just as if cramps or mood changes were going to affect their performance (Smith & Orr, 2022). By prioritizing menstrual health in training programs, coaches and athletes can work together to achieve optimal performance and well-being.

Research and Future Directions

Research on the relationship between the menstrual cycle and athletic performance has revealed many gaps that need filling: data are inconsistent and contradictory (Jones et al., 2024). For instance, while some athletes report decreased performance during menstruation, others notice no change or even improved performance (Michelekaki et al., 2023). A narrative review highlights that perceived and objectively measured performance can vary widely across different phases of the menstrual cycle (Carmichael et al., 2021). This variability

underscores the need for more comprehensive and well-designed studies to explore the nuanced effects of hormonal fluctuations on performance outcomes, such as endurance and power resistance (Meignié et al., 2021). Addressing these gaps is crucial for developing more effective training programs tailored to the unique physiological needs of female athletes.

Technological advancements make it possible for female athletes to track wearables, and applications accurately during their cycles to get and fit how fluctuations during the phases can influence performance (Yapici-Oksuzoglu & Egesoy, 2021). This technology allows for personalized training adjustments, ensuring that athletes can plan high-intensity sessions during their peak performance days and incorporate recovery during phases of lower capacity. For example, athletes can benefit from understanding that hormonal levels during certain phases might enhance endurance or strength, allowing them to tailor their workouts accordingly (Statham, 2020). As these technologies become more sophisticated, they promise to greatly enhance the ability of coaches and athletes to make informed decisions, ultimately improving competitive outcomes.

There is an increasing call from interested parties for greater focus on female sports-science research. This is gaining greater recognition by more stakeholders coming to appreciate the unique challenges faced by female athletes, with a background of sports-science research traditionally more focused on males, leading to gaps in areas of female-related issues, such as the effects of the menstrual cycle on performance (Yapici-Oksuzoglu & Egesoy, 2021). There is a growing call for more research that considers the physiological differences between genders, with a particular emphasis on hormonal cycles (Höök et al., 2021). In this way, the sports science community could focus on female-specific research and provide much sounder and pertinent data aimed at effective use in training and competition in sports involving female athletes. This focus would be a major tenet of shifting the focus so that not just the outcomes in performance are enhanced but also well-being and health-related issues of the female athletes during their entire career are taken care of.

Conclusion

In conclusion the complex relationship of the menstrual cycle with physical performance should be seen as important in maximizing the training and competitive outcomes of the female athlete. In this way, distinct phases of the menstrual cycle—the follicular, ovulatory, and luteal—will enable the athlete to match energy levels, hormone fluctuations, and physical symptoms for the best performance. This should emphasize the fact that effects of hormones like estrogen and progesterone on muscle strength, endurance, coordination, and even

psychological state make special training and nutrition strategies a high priority. Equally important, the coaches and the athletes have to create an awareness about the continued progress that is to be done in research by initiating an open dialog about menstrual health and developing special teaching approaches in line with the individual cycles. Besides, continued research and technological developments in the field of menstrual tracking can reveal much more insight into the differences in female athletic performance. If this area is given due attention, then we may offer our female athletes an ability to train more productively and also overcome all difficulties on their way toward realizing their best in sports.

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Chapter 3

Optimal Performance Theory and Rafting

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Abstract

Optimal performance refers to the moments when an athlete is in physical, mental, and emotional harmony and shows the highest level of success. This study aims to examine the optimal performance emotional state of rafting athletes. The study population consists of licensed male and female rafters between the ages of 16-25 who actively continue their sportive activities in sports clubs in Rize province and participate in competitions. The sample of the study consists of a total of 95 volunteer athletes selected from the study population by the purposive sampling method. The Continuous Optimal Performance Mood-2 Scale was used to determine the optimal performance mood levels of the athletes.

It was created by Jackson and Eklund (2004) with 36 items and 9 sub-dimensions in order to evaluate the flow experience of individuals regarding a certain activity. Each sub-dimension of the scale consists of 4 items: task difficulty/skill balance, action-awareness combination, clear goals, specific feedback, task focus, sense of control, decreased self-awareness, transformation of time, and autotelic (intrinsic goal) experience. The Turkish validity and reliability study of the scale was conducted by Aşçı et al. (2007), and the internal consistency coefficients of the 9 sub-dimensions ranged between .49 and .88. For this study, the internal consistency coefficients of the sub-dimensions ranged between .66 and .87.

Calculations were made over the total scale score for the study, and the internal consistency coefficient for the total scale was found to be .92. Descriptive statistics, frequency, and percentage distributions were used to determine the general characteristics of the data. The normality test was firstly applied to the data obtained from the scale. It was seen that the data had a normal distribution. For pairwise comparisons, a t-test was applied for two independent groups. One-way ANOVA (Oneway) tests were applied for three or more comparisons. Statistical tests were tested at the $\alpha=0.05$ significance level.

Keywords: Optimal Performance, Emotion Management, Team Dynamics

Introduction

Sport psychology is an important discipline that investigates how individuals can manage their mental and emotional processes to enhance their physical performance and optimize their success in sport (Schinke, 2018). The ability of athletes to exhibit high performance depends not only on their physical preparation but also on their mental endurance, focus, and ability to manage their emotional states. Especially in high-risk extreme sports such as rafting, athletes' ability to adapt to complex environmental factors requires them to make the best use of their physical and mental limits (Weinberg & Gould, 2018).

In this context, the optimal performance mood state, or more commonly known as the flow state, defines the moments when athletes perform with the highest level of focus and motivation and are in a mentally and psychologically optimal state (Aydođan et al., 2022; Jackson et al., 2001; Jackson et al., 1998; Jackson & Marsh, 1996). This experience allows individuals to go beyond their limits both mentally and physically. Optimal Performance Theory elaborates on the conditions that enable such experiences to occur and aims for athletes to maintain a delicate balance between ideal mood, motivation, and arousal levels. This theory is even more critical in sports such as rafting that require intense attention, quick decision-making, and teamwork (Moran, 2016; Fletcher & Sarkar, 2012).

Rafting is a challenging sport that affects team performance as well as individual skills (Kerr & Mackenzie, 2012). The ever-changing nature of rivers, time pressure, and high physical risks require athletes to make quick and accurate decisions. In such situations, athletes' psychological resilience and mood management skills are among the most important determinants of individual and team performance. For example, the study by Wagstaff et al. (2012) revealed the effects of athletes' emotion regulation strategies on performance and emphasized the critical role of mood management in team communication and cooperation.

As a matter of fact, Hanin's (1997) Individualised Zone of Optimal Function (IZOF) Model enabled the definition of ideal emotional states in which athletes can perform their best performance by taking into account their individual differences. This model enables the development of strategies to facilitate athletes' emotional adaptation in stressful and complex environments such as rafting. Such approaches increase athletes' ability to cope with stress and environmental factors while strengthening their mental preparation for optimal performance. These studies reveal the importance of the challenges arising from the nature of rafting sport, the importance of athletes' psychological skills and mood management strategies, and show that optimal performance theory should be examined more comprehensively in this context. Accordingly, this study aims

to evaluate the optimal performance mood of rafting athletes in terms of various variables.

Materials and Methods

Research Design

Based on the research problem, this research was conducted with the single survey model, which is one of the general survey models. In studies in which the single survey model is used, it is aimed to describe the variables belonging to the event, individual, item, subject, group, etc., unit, and situation separately (Karasar, 2009).

Participants

The study population of the research consists of licensed male and female rafters between the ages of 16-25 who actively continue their sportive activities and participate in competitions in sports clubs in Rize province. The sample of the study consists of a total of 95 volunteer athletes selected by the purposive sampling method from the study population. Data on the demographic characteristics of the athletes are presented in Table 1.

Table 1. Descriptive statistics of rafting athletes aged 16-25

Variable	Group	n	%
Gender	Male	68	71,6
	Woman	27	28,4
Age	16 years old	16	16,8
	17 years old	16	16,8
	18 years old	16	16,8
	19 years old	18	18,9
	20-25 years old	29	30,7
Nationality Status	Yes	22	23,2
	No	73	76,8
Rafting Year	1 Year and Less	48	50,5
	2 Years	23	24,2
	3 Years and Over	24	25,3
Weekly Training Day	2 Days and Less	12	12,6
	3 Days	24	25,3
	4 Days	34	35,8
	5 Days and Over	25	26,3

According to Table 1, a total of 95 rafting athletes participated in the study. 71.6% of the participants were male (68 people), and 28.4% were female (27

people). In the distribution of age groups, there are individuals between the ages of 16-25, and the highest rate is seen in the 20-25 age range (29 people) with 30.7%. While 23.2% of the participants were national athletes (22 people), 76.8% did not have national team experience (73 people). When the years of rafting experience of the athletes were analyzed, 50.5% had 1 year or less experience (48 people), 24.2% had 2 years (23 people), and 25.3% had 3 years or more experience (24 people). In terms of the number of weekly training sessions, 12.6% of the participants train 2 days or less (12 people), 36.8% train 3 days (35 people), and 26.3% train 5 days or more (25 people).

Data Collection Tool

The personal information form prepared by the researchers was used to determine the demographic information of the students, and the Continuous Optimal Performance Mood State-2 Scale was used to determine the optimal performance mood levels.

Continuous Optimal Performance Mood-2 Scale

It was created by Jackson and Eklund (2004) with 36 items and 9 sub-dimensions in order to evaluate the flow experience of individuals related to a specified activity. Each sub-dimension of the scale consists of 4 items: task difficulty/skill balance, action-awareness combination, clear goals, specific feedback, task focus, sense of control, decreased self-awareness, transformation of time, and autotelic (intrinsic purpose) experience. The Turkish validity and reliability study of the scale was conducted by Aşçı et al. (2007), and the internal consistency coefficients of the 9 sub-dimensions vary between .49 and .88. For this study, the internal consistency coefficients for the sub-dimensions vary between .66 and .87. Calculations were made on the total scale score for the study, and the internal consistency coefficient for the total scale was found to be .92.

Analyzing the Data

The data obtained were transferred to the computer environment. The normality assumptions of the data were examined by means of the SPSS V.27 program, and the results are presented in detail below. The mean scores of 95 athletes' responses to the scales were analyzed; after descriptive statistics were made, T-Test was used according to gender and nationality variables, and the One-Way ANOVA test was used according to age, years of rafting, and weekly training days variables. Data were tested according to the $\alpha = 0.05$ significance level.

Results

The findings obtained from the analyses conducted for the purpose of the study are presented in this section. In order to determine whether there is a significant difference between the optimal performance emotional state depending on the gender and nationality status of the athletes, a significance level of $\alpha = 0.05$ was applied to the T-test.

Table 2. T-Test Results of Optimal Performance Emotion Status of Athletes

Variable	Group	n	\bar{x}	S	t	p
Gender	Male	68	139,84	23,04	-1,371	0,076
	Woman	27	146,44	15,40		
Nationality Status	Yes	22	142,18	22,15	0,117	0,808
	No	73	141,58	21,17		

The test results showed that the difference between the optimal performance mood of the athletes according to the gender variable was not significant ($t_{0,93}; -1.371; P > 0.05$). In other words, although the optimal performance mood scores of female athletes (146.44 ± 23.04) were higher than those of male athletes (139.84 ± 15.40), this difference was not statistically significant. Similarly, the difference between the optimal performance mood of the athletes according to the nationality status variable was not significant ($t_{0,93}; 0.117; P > 0.05$). In other words, although the optimal performance mood scores of national athletes (142.18 ± 22.15) were higher than those of non-national athletes (141.58 ± 21.17), this difference was not statistically significant.

In order to determine whether there was a significant difference between the optimal performance emotional state of the athletes depending on age, years of rafting, and number of weekly training, an $\alpha = 0.05$ significance level ANOVA test was applied.

Table 3. ANOVA Test Results of Optimal Performance Mood State of Athletes

Variable	Group	n	\bar{x}	S _S	F	p
Age	16 years old	16	136,81	20,21	0,424	0,791
	17 years old	16	145,31	21,68		
	18 years old	16	139,13	29,69		
	19 years old	18	143,50	21,54		
	20-25 years old	29	142,76	16,35		
Rafting Year	1 Year and Less	48	136,96	21,97	2,507	0,087
	2 Years	23	146,26	22,09		
	3 Years and Over	24	146,88	17,37		
Weekly Training Day	2 Days and Less	12	150,42	13,39	0,769	0,514
	3 Days	24	140,46	24,54		
	4 Days	34	140,06	20,43		
	5 Days and Over	25	141,00	22,28		

The test results showed that there was no significant difference between the optimal performance mood according to the age of the athletes ($f_{4,90}$; 0.424; $p > 0.05$). In other words, although the optimal performance mood scores of 17-year-old athletes (145.31 ± 21.68) were higher than those of 19-year-olds (143.50 ± 21.54), 20-25-year-olds (142.76 ± 16.35), 18-year-olds (139.13 ± 29.69), and 16-year-olds (136.81 ± 20.21), this difference was not statistically significant. Another variable, the year of rafting, showed that the difference between the optimal performance mood of the athletes was not significant ($f_{2,92}$; 2.507; $p > 0.05$). In other words, although (146.88 ± 17.37) was higher (136.96 ± 21.97) than the athletes who had been doing sports for 2 years (146.26 ± 22.09) and 3 years or more, respectively, this difference was not statistically significant. Similarly, the difference between the optimal performance mood of the athletes according to the number of weekly training sessions was not significant ($f_{3,91}$; 0.769; $p > 0.05$). In other words, although the optimal performance mood scores (150.42 ± 13.39) of the athletes who trained 2 days or less weekly were higher (140.06 ± 20.43) than the athletes who trained 5 days or more (141.00 ± 22.28), 3 days (140.46 ± 24.54) and 4 days (140.06 ± 20.43), respectively, this difference was not statistically significant.

Discussion and Conclusion

Within the scope of the study, the effects of factors such as gender, age, nationality status, years of rafting, and number of weekly training sessions on the optimal performance mood levels of rafting athletes were analyzed. In the analysis conducted in terms of the gender variable, although there was no statistically significant difference between the optimal performance mood levels of the athletes, it was observed that female athletes obtained higher scores than male athletes. This result may be consistent with the existing literature examining the effect of gender on athletes' optimal performance mood, but it may also show differences. It has been emphasized in some studies that female athletes may have higher emotional intelligence and emotional regulation skills than men. Studies suggest that women are generally more successful in coping with stress and managing their emotional states, and that these characteristics positively affect their performance (Tamminen & Holt, 2010; Laborde et al., 2014). Emotional balance may be an important factor affecting performance in extreme sports such as rafting; in this context, it has been suggested that female athletes' ability to maintain emotional balance may be stronger than male athletes (Gould & Udry, 1994). However, there are also studies that these findings are not always consistent. In some studies, it has been reported that there is no significant difference in emotional state management between male and female athletes and that both genders provide similar levels of optimal performance emotional state (Gould et al., 2002). It is also emphasized that individual differences and environmental factors have a significant effect on emotional state. In particular, it has been stated that factors such as athletes' experience level, training history, and mental endurance may be more determinant than gender differences (Vealey, 2007).

There are several possible explanations for the higher scores of female athletes compared to males. First, it is thought that women are generally stronger in emotional awareness and emotional regulation. This characteristic may lead female athletes to be more effective in achieving psychological balance, which is a critical factor for optimal performance mood. In addition, social and cultural factors may also influence this. The fact that women are more supported in areas such as emotional intelligence and empathy may increase their ability to manage their emotional state. In extreme sports such as rafting, emotional balance stands out as a factor that directly affects performance. The higher scores of female athletes in this sport may suggest that their stress coping and focusing skills may be more developed. In addition, the characteristics of the research sample are another possible explanation for this result; the fact that female athletes have

more experience or an intensive training history compared to men may be a factor that reveals this difference.

Although there was no statistically significant difference between the optimal performance mood levels of the athletes in the analysis conducted in terms of the nationality variable, it was observed that national athletes obtained higher scores than non-national athletes. The fact that national athletes obtained higher scores than non-national athletes can be explained by the psychological advantages of competing at the national level. Research shows that national athletes have more intense training programs, more competitive experiences, and the ability to perform under high pressure. These experiences may improve athletes' ability to maintain emotional balance and cope with stress (Gould & Udry, 1994). Moreover, nationality status may positively affect optimal performance moods by providing athletes with a sense of belonging and stronger motivation (Weinberg & Gould, 2014). On it, it shows that nationality consciousness has a significant impact on athletes' psychological well-being and can improve their performance.

While there was no statistically significant difference in the athletes' optimal performance mood levels according to the age variable, the lower scores of the athletes with younger ages can be explained by the possibility that young athletes' emotional regulation and stress-reduction abilities are less developed. When it comes to the development of psychological resilience and emotional equilibrium, youth may be an immature stage (Hanton, Neil, & Fletcher, 2008). Furthermore, older athletes may be better able to maintain the emotional equilibrium required for peak performance due to their experiences, exposure to more competitive settings, and capacity to handle a variety of stressors (Gould et al., 2002). The impact of age on athletes' psychological abilities in this context is linked to personal growth and experience.

Although no statistically significant difference was found between the optimal performance mood levels of the athletes in the analysis conducted in terms of the years of rafting, the fact that athletes with fewer years of rafting obtained lower scores may indicate that experience has an important effect on emotional regulation and coping skills with stress. As athletes gain experience, they are expected to cope better with the psychological pressures of sport and maintain the emotional balance necessary for optimal performance (Gould et al., 2002). In high-risk sports such as rafting, experience can increase athletes' self-confidence and improve their performance (Fletcher & Hanton, 2001). In this context, it can be said that as the number of years of rafting increases, athletes' emotional management skills improve, and with this improvement, they reach higher optimal performance mood levels.

The fact that athletes with a low number of weekly training sessions obtained higher scores suggests that the effect of training frequency on performance is complex and may show different dynamics for each athlete. The higher scores of athletes with a low number of training sessions may indicate a situation in which excessive training load may cause physical and psychological fatigue, which may negatively affect emotional balance. Furthermore, athletes who train less may be more effective in coping with stress and maintaining emotional balance by keeping their minds fresh with more rest time (Kellmann, 2010). This suggests that the optimal performance mood level depends not only on the amount of training but also on rest, regeneration, and psychological well-being. That is, the relationship between training frequency and optimal performance mood may reflect a balance shaped by personal factors and experience.

In conclusion, optimal performance mood levels are based on a balance that is shaped not only by physical training but also by emotional regulation, psychological resilience, and environmental factors. These findings emphasize the need for a more comprehensive approach to improve the emotional state of athletes and provide important clues for future research. Considering that there is a strong relationship between physical training and emotional intelligence and stress management, it is suggested that emotional regulation and stress management techniques should be included in training programs to improve the psychological skills of athletes. These techniques can help optimize athletes' performance by increasing their emotional resilience. It should also be emphasized that environmental factors should be taken into account as well as physical factors such as training frequency and intensity. Environmental factors cover a wide range, from the training environment to social support systems, and have a significant impact on the mental and emotional state of athletes. Therefore, it can be said that creating a healthier competitive environment for athletes to increase their performance will also contribute to their psychological well-being. In addition, providing guidance and counselling services tailored to the individual needs of athletes may be an important step towards improving their optimal performance mood levels. Finally, it would be useful for future research to investigate the effects of variables such as gender, age, experience, and training duration on these levels by examining the optimal performance mood levels of athletes in different sports with a larger sample. In addition, a more detailed examination of the relationships between psychological resilience, emotional intelligence, and performance may contribute to the creation of strategies to support the mental and emotional development of athletes. In this way, athletes can reach high performance levels not only physically but also emotionally and mentally.

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Chapter 4

Effect Of Sports On Personality Traits*

Sevcan GÜLEY ARSLAN¹
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INTRODUCTION

Sports are physical activities and also define personal and social identities for individuals. Sports play a crucial role in socialization of individuals as they create a social activity environment that allows individuals to participate in the social environment. Considering that sports constitute a collective activity in societies, individuals who participate in sports activities and are interested in sports enter into social interaction with different groups of people. In this way, sports enable individuals to get out of their limited world and communicate with people with different beliefs and thoughts. In this respect, sports play an important role in establishing and strengthening new friendships and in enabling individuals to interact socially. Sports constitute an important topic of conversation not only among individuals who engage in sports but also among the audience (Küçük and Koç, 2003). In fact, sports enable individuals to grow up as creative, productive, characterful, constructive, tolerant, sensible, moral, self-confident, gentlemanly and well-mannered individuals (Saygın, 2012). In a sports environment, people have the opportunity to express themselves. A significant development is achieved in personality and self-structure. This shows that sports have great importance in human life (Küçük and Koç, 2003).

Personality traits are a situation that creates individual diversity with the consistent display of individuals' feelings, thoughts and behaviours. Although personality traits usually appear as a reflection of temporary emotional states, they tend to show continuity at some times (Huhra, 2007). The characteristics that make up personality are mostly affected by genetic factors and also depend on the effects of developmental processes and environmental factors. Today, both the social environment and genetics have an effect on personality (Sheard, 2012). The attitude of an individual towards a problem is a reflection of his/her personality traits and value judgments (Li et al., 2007). Qualified human resources cannot be productive and cannot achieve what is expected of them without being healthy. The most appropriate and effective means for the development of the physical and mental structure of people, especially young people, is physical education and sports education, which includes all types and principles of movement factors (Açıkada and Ergen, 1990). Because it is the most appropriate and important educational tool for educating and developing the physical and spiritual structure of people, especially children and young people. Sports contributes significantly to the upbringing of especially young generations as constructive, qualified, creative, with a high sense of national unity and solidarity and behavior, thus contributing to economic, social and cultural development (Yetim, 2015).

In order for people to survive in this rapidly developing and changing world as a country and to make physical activity a way of life for a healthy and comfortable life, the necessary sensitivity should be given to sports education (Çetin, 2010). In this research, the effect of sports on the development of individuals' personality traits was examined.

The Concept of Personality

People have tried to make many definitions and classifications in order to understand other people and predict their behaviors. In this process, psychological theories have also evaluated and tried to define the definitions of the concept of personality according to their own perspectives. Since each psychological theory has a different definition for the concept of personality, it is not possible to make a common definition and classification at the moment (Şahin, 2017).

The word personality is expressed as “persona” in Latin. In ancient Greek theatre, the word “persona” is the name given to the masks that actors wear on their faces in order to better reflect the characters they portray. The word "persona" was first used by Jung. The masks called "persona" were used to convey the message that there were personal differences between individuals. Some researchers state that the development processes of the concept of personality predate the science of psychology. Empedocles, one of the ancient Greek thinkers, conducted studies to define the concept of personality. It is stated that Empedocles defined personality as the relationship between love and hate through elements such as air, water, earth and fire before Christ. At the same time, Hippocrates, one of the ancient Greek philosophers and the founder of modern medicine, observed that some patients showed similar characteristics during the treatment process, while some patients exhibited completely different behaviors from other patients (Gümüş, 2009).

Hippocrates tried to classify patients according to certain characteristics as a result of his impressions. He tried to divide them into groups as those whose lives were dominated by order and pessimism melancholic, those who tended to be group leaders choleric, those who spoke loudly and were late optimistic, and those who preferred to follow and tended to go in every direction with someone else's choice cold-blooded. Although today's medical science no longer accepts these definitions of Hippocrates, the origin of personality-related research and studies is based on this classification of Hippocrates (Uludağ, 2017).

Personality includes everything that concerns a person. Personality is a long and uninterrupted process that begins in the womb and continues until the end of life. Personality is an important subject in psychology and there is more than

one definition of personality (Tazegül, 2012). However, a holistic definition of personality cannot be made and is based on the psychological theory that the definer is close to. Personality includes all the characteristics, abilities and their interaction with each other rather than being based on some characteristics of the individual (Özgüven, 1999).

Although different definitions of personality have been made throughout history, two elements dominate the studies on personality theory. These are human nature and individual differences. Human nature includes common characteristics of people, such as common motives, aims, and universal or relatively universal psychological mechanisms. Human nature includes the ways people make decisions, respond to environmental triggers, and even affect their environment (Buss, 1999).

According to Köknel (2005), the concept of personality is a functional integrity formed by emotions, thoughts, talents, skills and habits that are different in each individual. In other words, personality can be defined as the totality of all thoughts, emotions, talents, skills and habits that are formed/created differently in each individual, felt differently/at a different rate and expressed differently. Tan (2000) stated that the characteristics that emerge as a result of a person's experiences become systematic and form a "personality system" or "personality concept" specific to the person. The development of a system of thoughts, emotions and behaviors specific to the person depending on these characteristics is called personality.

Personality is also defined as the totality of emotional, behavioral and mental characteristics that distinguish individuals from each other. Although a person's attitudes and behaviors may vary over time, personality traits are permanent and consistent. Although personality is composed of consistent and permanent characteristics, measuring personality is not as easy as measuring abilities. Personality is neither solely dependent on hereditary characteristics nor solely dependent on external factors. Personality is the individual differences that all these elements create in a person. Personality should be considered as a manifestation or result of interaction between individual and his/her environment. When it comes to environment, it should be considered that social environment has a greater effect than natural environment. Essentially, it is quite difficult to determine which characteristics of personality are genetic (naturally) and which characteristics are learned (socially). It is possible to define personality as individual's lifestyle (Erdoğan, 1999). Personality is also defined as distinctive and individual-specific patterns of emotions, thoughts and behaviors that define way an individual interacts with social environment (Smith et al., 2012). Cüceloğlu (2000) defined personality as "a consistent and

structured relationship that an individual establishes with his/her internal and external environment, distinguishing him/her from other individuals.” Distinctive features are the unique characteristics of an individual that differentiate him/her from other people. Consistent and structured traits are defined as the situation in which a person gives similar responses in similar situations over time and all personality traits of the individual are in harmony with each other.

Personality is the unchanging characteristics that constitute the behaviors of individuals (Taşçı and Eroğlu, 2007). Burger (2006) expressed personality as consistent behavioral patterns caused by personal processes and the individual. Özdevecioğlu (2002) also explains personality as the sum of the characteristics acquired through genetic transmission and later on through living conditions within the society. In a similar definition, personality is the combination of the hereditary characteristics of individuals and their family, friends, culture, and the entire environment in which they socialize, in short, the combination of innate characteristics and acquired characteristics (Eren, 2004).

In conclusion, personality is the totality of the individual's innate characteristics as well as the characteristics acquired as a result of interaction with the environment. These characteristics possessed by the individual are unique to him/her and the individual exhibits his/her behaviors within the framework of his/her unique characteristics under all circumstances.

Factors Affecting Personality

Personality is defined as the thought, emotion and behavior model that distinguishes one individual from another, total of biologically based and learned behaviors that constitute person's unique responses to environmental stimuli, innate and acquired characteristics, behavior exhibited in the social environment, the total of mental and physical characteristics, and a whole that directs behaviors and creates individual balance (Kandler and Bleidorn, 2015). Personality affects everything from the individual's speech, behavior, posture and the environment they enter, and physical and mental differences in individuals have an impact on their attitudes, behaviors and thoughts (Sarıtaş, 1997).

Personality development is a process that begins at birth. In the late adolescence, through the socialization process, the learning process, education and training, certain personality patterns are formed. These personality patterns gain consistency and continuity in adulthood. In general, it is debated whether personality is related to genetic factors or human free will. Those who argue that genetic factors are effective focus on biological foundations experienced in

the past, while those who emphasize the importance of human free will defend the idea that personality can be developed and changed (Schultz and Schultz, 2013).

The factors that affect the formation of personality can be summarized as follows:

Biological and Genetic (Hereditary) Factors

Individuals' biological structure and genetic characteristics are effective in the formation of personality. Studies on personality have shown that there is a relationship between an individual's physical appearance, age, being a woman or a man, facial attractiveness, energy level, nervous system and biological rhythms and their personality, but the degree to which these affect personality varies from individual to individual (Abdioğlu et al., 2015). The heredity approach claims that ultimate explanation of an individual's personality is molecular structure of genes found on chromosome 37 (Robbins and Judge, 2013). In addition, it is argued that the nervous system also has effects on personality development. Mental abilities and sensory motor skills are also determined by nervous system. The autonomic nervous system and central nervous system are responsible for personality development (Güney, 2016). This shows that hereditary and biological factors have an important impact on personality development. Individuals carry many characteristics of their parents through the genes they receive from their families, and personality begins to take shape after these genetic characteristics interact with the environment (Gülücü, 2017). When the environment is observed, many examples can be found showing that physical characteristics are effective in interpersonal relationships (Özkalp, 2018).

In some studies on personality theories, body types have been divided into three and an attempt has been made to determine the relationship between their personalities. It has been claimed that in the first type, a short and fat person is relaxed, gentle-tempered and enterprising; in the second type, a tall and thin person is calm, shy, controlled and a loner; in the third type, a large person with well-developed muscles is physically active and aggressive (Atkinson et al., 1999). There are many studies that try to determine the role of genetics in determining personality traits. As a result of these studies, it has been accepted that genetics has an effect on personality traits (Güleç, 2010; Tekin, 2012). Cloninger (2004) argues that the effect of genetic structure on personality is shaped by environmental conditions, and that people with the same genetic potential will have different personality traits when they are in different environmental conditions. In summary, although it is accepted that physical

characteristics and genetics play a role in determining personality traits, the extent to which they play a role is still being debated.

Familial Factors

Individuals are affected by the behaviors, feelings and thoughts of the people they value in their environment. Since the family is the closest to the individual, it has an important effect on the formation and development of personality (Tekin, 2012). Many studies and theories on personality have stated that family is the most important factor in personality. The first social group an individual is in when he/she is born is the family (Güney, 2007). Family has a determining effect on personality traits. According to Adler, the approach of the mother and father to the child in the early stages of childhood plays a crucial role in formation of personality. In addition to being a unit that meets the child's basic needs such as nutrition, care, protection, and love, family is also the most important institution that guides child's personality development. Considering all these, a consistent and balanced environment with respect and love ensures that solid steps are taken in the child's personality development (Cüceloğlu, 2000; Kulaksızoğlu, 2003). The family's attitudes towards the child are the main factors in the formation of the child's personality, while also forming the basis of the behaviors that the child will display in later years.

Democratic families who give their children the love they need, respect them, and accept that they are separate individuals encourage the child to develop an independent personality. Children who grow up in such a family environment can become individuals who can express their thoughts easily, have a sense of confidence, have a sense of responsibility, develop and realize themselves, and respect themselves and others. At the same time, the social class in which the family is located also affects the child's self-esteem, self-perception, and self-confidence, and therefore shapes their personality traits (Cirhinlioğlu, 2001). There are also parental attitudes that cause children to have personality problems when they reach adulthood. These are expressed as constantly caring and overprotective parental behavior and neglect. These behaviors cause children to become spoiled, have a sense of inferiority, and develop a cold personality structure and a tendency to avoid establishing warm relationships with their surroundings in later years. Considering these evaluations, it can be said that; with a harmonious family education, the child can develop a healthy and balanced personality with the family members being consistent in their attitudes towards the child, as well as behaving with understanding, common sense and knowing the child's needs and limits (Burger, 2006).

Socio-Cultural Factors

Humans are social beings who must establish relationships and interact with the social environment they live in. These interactions teach the individual the values, lifestyle, behavior, traditions, and expectations of that society from its members. Culture shapes personal values and tendencies. The values and norms shared by members of a social group distinguish it from other social groups. Each society has its own personality structure, lifestyle, customs, traditions, goals and attitudes. These characteristics greatly affect personality development. At the core of culture is the collective programming of the mind. Culture is about a common system of attitudes, beliefs, attributes, properties, traditions and values that define group behavior. Therefore, culture plays an important role in influencing the behavior of an individual (Güney, 2016). People do not have the chance to choose the society they live in. For this reason, individuals adopt cultural pattern of the society. It is argued that the interests and ideals of individuals are shaped by cultural structure, are affected by the change and development of the cultural structure, and cultural factors affect personality development to a greater extent than genetic and biological factors (Topçu, 2015).

Individuals are members of the culture of society, but they are also members of some subgroups of society. Various demographic characteristics such as age, gender, religion, family, occupation, social class can be expressed as subgroups of society. Together with educational institutions, these groups determine and teach the role of a person. It is argued that the most important of the subgroups is the family. It enables the child to socialize and learn behavioral patterns. For this reason, it is accepted that the most important social institution in personality development is the family (Doğan, 2005). In addition to the family being the most important institution in personality development, there are studies reporting that the culture in which the individual is raised also has a significant effect (Kulaksızoğlu, 2003). It is stated that a healthy cultural structure is necessary for the individual to achieve healthy personality development (Cüceloğlu, 2000).

Geographic and Physical Factors

Another factor that affects personality traits is the physical and geographical environment. From ancient times to the present, it is assumed that people's personality traits vary according to geographical regions, climate and natural factors. It is observed that the personality traits of individuals living in close geographical areas are similar. It is suggested that this situation occurs because of the effects of shared genes, shared physical environment and shared culture

(Allik and McCrae, 2004). It is possible to say that there are personality differences among people living in coastal areas, mountainous regions, plains, hot or cold climates. For example, it has been observed that people who grew up in cold climates are more dull-tempered and harsh, while people who grew up in hot climates are softer and more adaptable to change (Tekin, 2012; Yıldızoğlu, 2013).

Psychological Factors

The individual's desire to grow, develop and become stronger, the desire to mature and change, the desire to gain individual independence, the desire to succeed and gain confidence, the desire to be liked and appreciated, the desire to establish positive social relationships and the desire to be happy are among the psychological factors that affect personality development (Kulaksızoğlu, 1998).

Socialization and Social Class Factors

The socialization process begins with the birth of the individual. Therefore, the socialization process first begins in the family (Aydın, 2000). Socialization is the individual's adoption and compliance with behavioral patterns as a result of the relationships they establish with others. The phenomenon of socialization, which accelerates with adolescence, is a search for self-discovery for individuals during these periods. The roles of the individual in society are another important issue in socialization. Healthy socialization has many positive effects on the individual. The individual's sense of self-confidence and the system of norms and values develop together. Socialization contributes to the realization of social integration, as it develops understanding and tolerance towards other people. As a result of socialization, each individual adopts his/her own culture. The social class a person is in can affect the individual's lifestyle, tendencies, emotions, thoughts and various personal characteristics. For example, a child born in a higher class will display behaviors appropriate to his/her class, while an individual born in a lower class will continue his/her life by displaying behaviors appropriate to his/her class (Eroğlu, 2007). The family is the first social group in which individuals live. Later in life, they interact with various social groups. For example; the formation of school, team, professional and work friendships is under the influence of the social class factor (Güney, 2007).

Mass Media

In addition to hereditary, structural, family, social structure-class and cultural factors in personality development, mass media (books, radio, magazines, television, newspapers, etc.) also affect personality. Mass media enables messages to be delivered to many people at the same time. For this reason, it is widely used for educational, cultural and entertainment purposes. As a result, it has effects on the personality traits of individuals (Topçu, 2015). The personality traits of individuals may differ depending on their use of mass media. Because mass media can be effective in individuals' behavioral patterns and children's development (Öktem, 2009). Social media has an interactive structure. While traditional media is one-way information transfer and distribution, social media allows two-way communication (Lee and Cho, 2011). There are studies examining relationship between personality and social media. It is stated that personality traits are effective on preferred social media and usage habits. It has been determined that individuals who are active social network users have extroverted personality traits and are open to experiences (Dal and Dal, 2014).

Personality Theories

It is stated that studies on understanding personality date back to the pre-Christian period. Studies in this field began with Sigmund Freud's explanation of the basic characteristics of personality, and new personality theories were developed in certain periods. In particular, the theories put forward prepared the ground for the creation of new theories. Personality is an extremely complex, abstract concept. Therefore, it is quite expected that theorists approach the concept of personality from different perspectives. All approaches put forward to understand personality begin with a theory. Theories attempt to explain the mechanisms underlying human personality and how these mechanisms are responsible for the emergence of behaviors specific to the individual (Burger, 2006). Theories often emerge from the writings of leading psychologists, which include their own descriptions to explain consistent behavioral patterns and intrapersonal processes. No matter how objective the descriptions are, the individual observing what is observed always has a personal interpretation. For this reason, multiple personality theories have been developed (Yazgan and Yerlikaya, 2008). The most prominent of these theories are explained below:

Sigmund Freud - Psychodynamic theory

Sigmund Freud is a neurologist in the field of medicine. According to Freud, the early childhood period is important in personality development. The

qualities structured in these years are quite strong and resistant to change (Cüceloğlu, 2000). Freud shed light on the research on personality development by theorists who came after him by emphasizing the importance of childhood in the process of personality development and the importance of parental behavior in raising children (Aral et al., 2000).

Psychodynamic personality theory is the first comprehensive personality theory developed by Sigmund Freud. Freud demonstrated that the subconscious mind has an effect on the behavior of the individual as a result of his hypnosis studies for the treatment of hysterical patients. According to psychodynamic theory, there are important types of mental processes according to the degree of awareness. In his theory, Freud mentioned three levels of awareness. These are; conscious, subconscious and unconscious. According to Freud, the conscious level includes the thoughts that are aware of at any moment. The subconscious consists of mental content that can be easily aware. Finally, the mental content of the unconscious is the part of the mind that is not aware of except for some special conditions and cannot be aware of except for some special conditions. In addition, unconscious contents are anxiety triggers and can never be observed directly (Cervone and Pervin, 2016).

According to structural personality theory, personality consists of three parts called ego, id and superego. Freud stated that personality consists of some parts that are not in harmony with each other and that when an individual is born, there is only one personality structure, the id. The id is the selfish side of the individual, it only satisfies personal desires, works according to the pleasure principle, and the lower self's impulses are below consciousness. The ego acts according to the reality principle, that is, the ego's first duty is to satisfy the lower self's impulses, but while doing so, not to ignore the realities of the situation it is in. Finally, the superego represents the values and standards of society. It places restrictions on what the individual can and cannot do and can also be considered as conscience (Topses and Serin, 2012).

Erik H. Erikson - Psychosocial Personality Theory

Erikson addressed the formation and development processes of personality in all periods from the birth of the individual to his death. Psychosocial personality theory examines the development of human behavior within the social and cultural context. The starting points of Freud's personality theory and Erikson's personality theory are similar. The terminology used by Erikson in his personality theory is similar to Freud's personality theory (Topses and Serin, 2012).

Erikson proposed eight stages in psychosocial development. Each stage is expressed as a challenge that requires the individual to make a decision. Each stage builds on the previous stage for a successful solution. Psychosocial development stages are defined as opposites with positive and negative poles (Steinberg, 2013). According to Erikson, the formation and development of personality are listed as follows:

Basic Trust Versus Mistrust (0-1): This stage covers the baby's learning period through the mouth. This stage should be fed periodically and regularly. A baby whose needs are met with trust will be happier and more positive in later years. During this period, by eliminating the baby's attention, love, eating, drinking and situations that will cause discomfort, responding to their needs in a healthy way and satisfying their expectations will develop a sense of trust in the baby. If these needs are not met, negative aspects such as pessimism, substance abuse, introversion, and alcohol use may occur in later ages. This period means that both psychological and physiological needs of the baby are met. During this period, importance should be given to the development of a sense of trust in the environment of babies (Topses and Serin, 2012).

Shame and Doubt Versus Independence (1-3): During this period, the child can now use his/her own will. If we allow our child to structure his/her preferences through experimentation and use his/her free will during this period, we will have a positive effect on his/her personality development. In the opposite case, situations such as feeling ashamed, bad about oneself, and seeing oneself as mentally and physically bad may occur in later ages. For example, if children who start toilet training in this period are shamed and exposed to angry behaviors during this period, instead of the sense of autonomy that should be gained in children, a sense of shame will be gained (Bacanlı, 2002).

Guilt Versus Initiative (3-5): This is the stage in which the child can express himself/herself more easily and use his/her language and motor skills better. The most prominent feature of this stage is curiosity about sexual issues. Families who are unaware of children's curiosity may think that this is a moral disorder and may resort to getting angry, punishing or beating them, and this behavior causes destruction in children. During this period, children who cannot get help from their parents in the problems they encounter and who are scolded for every move they make, come to the idea that curiosity is a bad behavior (Bacanlı, 2002).

Productivity Versus Feelings of Inferiority (5-11): This is the period that covers preschool and primary school age. Social relationships develop, and this is the stage where learning and production processes are added. They learn that they can do a job on their own and how to get help when they have difficulty

and how to help others. Children who successfully pass this period become individuals who are at peace with themselves and have a sense of competence, without developing an inferiority complex. However, children who are not successful in this period develop a sense of inadequacy and avoid taking an active role in society in later ages (Burger, 2006).

Identity Acquisition Versus Role Confusion (12-19): This is the phase that covers the period immediately before and during adolescence. It is the period when rapid emotional and physical change occurs. During this period, individuals act with the aim of acquiring an identity. Habits, perspectives, beliefs and thoughts acquired up until that day may be questioned and changed. During this period, individuals may exhibit deviant behavior. However, over time, healthy and correct behaviors that are in line with social norms begin to take hold. It is an important phase for an individual to recognize and shape themselves. For this reason, it is known that adolescence is one of the most difficult developmental phases in human life (Burger, 2006). Individuals who successfully overcome this period gain a sense of identity, while those who cannot successfully overcome it fall into role confusion (Bacanli, 2011).

Intimacy Versus Loneliness (20-30): This stage is the adulthood stage and covers a wide time period. In this stage, if the previous stage was healthy, identity acquisition and identity conflict lose their importance, and the tendency to integrate, establish social relationships and maintain these relationships begins. Otherwise, individuals who have difficulty establishing relationships with others may have an unhealthy and undesirable personality structure (Topses and Serin, 2012).

Productivity Versus Inefficiency (30-60): This is a complete transition phase. During this period, individual continues to produce and begins to realize the purpose of production in an educational way. They acquire productive and guiding goals for the next generation. Individuals who do not have a productive structure during this phase may stagnate and collapse because they do not question their goals (Burger, 2006).

Integrity Versus Despair (60 years and older): This is the final stage of psychosocial development. This stage creates a conflict between regret and peace. Individuals who believe they have completed themselves, who have a sense of integrity and who do not regret the past are those who have overcome the previous stages healthily. People who are restless and hopeless are those who continue to live with regrets, who regret what they did in the past, and who are depressed. Individuals who experience these negative feelings express their hopelessness by looking at other people with hatred (Burger, 2006).

Eysenck Personality Theory

According to Eysenck, personality is defined as a permanent and stable organization of a person's character, mind, temperament and physique that plays an important role in the adaptation process (Eysenck, 2013). Eysenck worked on the organization of expressions prepared to define personality and determine interpersonal differences in certain groups or categories. After his various studies on normal, neurotic and psychotic groups, Eysenck revealed three personality dimensions with the help of statistical techniques in scales and stated that each individual can be placed in certain positions on these dimensions according to his characteristics. These dimensions put forward by Eysenck were stated as extraversion, introversion, neuroticism and psychoticism (Eysenck, 1990). Eysenck also developed a lying scale to obtain reliable responses to the scales of personality dimensions (Koşar and Kut, 1989). Eysenck argues that personality is largely biological and hereditary.

Extraversion represents impulsiveness and sociability, and people in this dimension are defined as individuals who are strong communicators, do not prefer to be alone, and are enterprising. Extroversion is basically characterized by characteristics such as sociability, initiative, friendliness, talkativeness, adaptability, liveliness, leadership, and activity. Extroverted individuals generally have many friends and enjoy participating in exciting activities. Introversion is the exact opposite of extroversion. Introverted individuals are generally withdrawn, quiet, do not have many friends and prefer to be alone. Cautiousness, shyness and passivity are other distinctive characteristics of introversion (İnanç and Yerlikaya, 2011). The terms introversion and extroversion refer to two extremes, and do not mean that everyone is either an introvert or an extrovert. They can be found anywhere between the two extremes, including somewhere in the middle (Eysenck and Wilson, 1996).

The second basic personality dimension in Eysenck's theory is neuroticism. Neuroticism is expressed as a dimension that shows the individual's tendency to behave emotionally. People with high levels of neuroticism are individuals who tend to behave restlessly, sensitively, anxiously, indecisively, emotionally, sadly or angry, who give excessive emotional reactions even in the face of minor obstacles and problems and have difficulty returning to normal, who get excited very easily and who can get depressed more easily than other people. In the psychoticism dimension, which Eysenck later added to his theory, psychotics are described as selfish, uninterested in others, unsympathetic, aggressive, cold and distant individuals (Eysenck, 1990).

Eysenck states that the extroversion dimension is more important than the neurotic and psychotic dimensions and that individuals have a more determined

structure (Burger, 2006). While extroversion represents impulsivity and sociability, individuals who score high on this dimension are defined as those who like to communicate with enterprising people and prefer to be with people rather than being alone.

It has been suggested that neuroticism dimension indicates emotional stability or overreactivity, and that a person who scores high on this dimension may be anxious, depressed, tense, shy, overly emotional and have low self-esteem. The psychoticism dimension refers to more unusual personality traits such as being cold, aggressive, distant, insecure, emotionless, strange, lack of empathy, guilt and insensitivity to other people (Karancı et al., 2007).

Carl Rogers - Humanistic Personality Theory

Carl Rogers is one of the initiators and representatives of the humanistic approach, which accepts human nature as constructive and positive and is based on the power of the person. He argues that the individual is free to make decisions. He argues that life is subjective and each individual is unique (Chamorro, 2008). The self is the basis of this theory. The self encompasses all the values that make an individual an individual. The characteristics that individuals possess that will make them feel more valuable are referred to as the ideal self. It is stated that individuals can be happy and satisfied by approaching their ideal self. Self-concept is a dynamic display of all the characteristics of the individual and is shaped over time, starting with birth. Self-concept has a dynamic structure and can change in accordance with experiences (Erden and Akman, 2003).

Rogers states that the basic motivating force of personality is the drive for self-actualization. While self-actualization is expressed as an innate motivation, the importance of living in the moment, helping and taking responsibility in the development of choices and creativity in personality function is stated (Whitworth, 2008).

The humanistic personality theory states that development and orientation towards what is good are within the individual. Rogers gave importance to the formation of self-awareness. Therefore, he stated that in order to have a positive self-awareness, individuals need to grow up with unconditional love. Unconditional love is an understanding that accepts that people deserve respect and love despite all their negative behaviors. He emphasized importance of mother-child relationship in development of the child's sense of self. Rogers called the mother's meeting the child's need for love unconditional love and stated that a baby who receives unconditional love will embark on a healthy personality development path. If the mother gives her love to her child only in

return for appropriate behavior, this is conditional love and the child internalizes this attitude of the mother and creates appropriate value conditions for it (Schultz and Schultz, 2002).

Personality and Sports Relationship

Individuals accept the society they live in with all its elements and socialize, while also finding their personalities within the framework of the rules that society presents to them. The development of personality is largely determined by the social environment surrounding the individual and is finalized within the boundaries set by the social environment. While the field of work that a person will use to prove himself/herself prevents the free development of personality with its mandatory rules, sports and other active activities offer the person an unlimited area away from pressure (Tosunoğlu, 2008).

When the relationship between personality and sports is examined, it has been determined that sports play an important role in development of individual's personality and in socialization process. Sports, which are an important element of cultural, economic and social development, are activities that improve the physical and mental health of individuals, support their personality development, increase their adaptation to the environment, ensure integration between people and societies, and are performed for the purpose of competing or winning in competitions (Aytan, 2010). Sports teach a fair fight and have a high communication value. One of the mechanisms of self-control is sports (Kuru, 2000). The success and performance of athletes depend on active training and the control of mental processes, emotions and thoughts in line with the interaction of body and mind with the genetic structure (Syer and Connolly, 1998).

In sports activities, the individual both experiences freedom and learns to respect the freedom of others, in other words, to control himself/herself. The self-control applied in sports is itself a sport. This real interaction between the voluntary free organism and thought turns into a game in sports (Tosunoğlu, 2008). Sports activities have indisputably important contributions in the development of an independent, secure personality in the acquisition of the habit of taking responsibility for one's responsibilities. Sports are both a physical and social phenomenon. Individuals who do sports control their negative behaviors such as anger, violence and shame better through the activities they do. The self-confidence levels of individuals who participate in sports activities increase (Kuru, 2003). There are studies showing that sports activities positively affect the spiritual and social development of the individual

and the differences in the personality traits of athletes and non-athletes (Weinberg and Gould, 2007).

It has been observed that people who do sports have different personality traits than those who do not. It is also accepted that individuals who do sports have different personality traits such as being more independent, objective and less anxious than those who do not do sports. It has been determined that individuals who are interested in sports are more social, hardworking, patient, balanced and have a higher ability to adapt to a new situation than individuals who are not interested (Tiryaki, 2000). In their research comparing the personality structures of athletes and non-athletes, Newman and Cooper observed that athletes were more dynamic, self-controlled, extroverted and agreeable than non-athletes (Korkmaz et al., 2003). Sports allow individuals to socialize, and the movements and games it contains provide individuals with the opportunity to express their emotions and self-actualize. Individuals discharge many negative instincts, such as aggressiveness, through sports and learn to dominate them. Thanks to sports activities, people have the opportunity to do a common activity. In such environments, people gain competition, work discipline, and determination to fight. They can establish positive relationships with people by learning to accept victory and defeat, to express themselves, and to respect the beliefs and thoughts of others (Şahan, 2008).

Personality alone is not sufficient to explain behavior in sports and exercise. In order to understand and predict the causes of behavior in sports and exercise, personality traits and the current situation must be considered together with physiological, cognitive and sociological changes (Weinberg and Gould, 2007). Psychological development is affected by being in good physical condition. In the studies conducted, the effect of bodybuilding on physical and mental development was studied and as a result, it was found that individuals' feelings of self-esteem increased along with the increase in their strength and muscle mass. Rafting, one of the nature sports, is an important recreational activity that allows individuals to discharge their energy and develop their solidarity, cooperation, sharing and integration skills because it involves adventure and, more importantly, is done in groups (Hazar, 2003).

Personality is a spiritual whole that gathers all characteristics of an individual. The person's intelligence, talents, emotional reactions, feelings, interests, and general culture are included in this whole. These characteristics are important factors that direct athletic movements and affect the athlete's efficiency (Başer, 1996).

It is important to choose the right person to raise a successful athlete, to guide a world-class successful athlete correctly, or to ensure the athlete's

continued success by making the right intervention when there is a problem with his/her performance. Knowing the athlete's personality is necessary to provide motivation, to contribute to the athlete's learning to regulate arousal, and to cope with emotions such as anxiety and stress (Ercan, 2013).

Just as the personality traits of individuals are affected by sports, their personality traits also significantly affect their athletic performance. The ability of individuals to direct their dominant personality traits to the sports branch they play can positively affect their athletic performance.

As a result, sports are a very important tool that helps individuals to reveal positive emotions such as fun, excitement, enthusiasm, fascination, and to enjoy life by minimizing negative emotions such as stress, anxiety, anger, and fear. In addition, through sports, individuals gain personality traits such as being determined, careful, creative, organized, hardworking, social, a leader, harmonious, happy, and self-managed.

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