



When the audience matters: a systematic review of spectator influence on sports performance

Cuando el público importa: una revisión sistemática de la influencia de los espectadores en el rendimiento deportivo

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Abstract

Introduction: The presence of spectators in sport has long been believed to influence athletes' performance, both as a source of motivation and psychological pressure. This phenomenon is explained through social facilitation theory, which states that social presence can enhance or decrease performance.

Objective: This study aimed to map recent empirical evidence on the influence of spectator, opponents and peer presence on athlete's performance, and evaluate the relevance of social facilitation theory in the modern sport context.

Methodology: The study used the Systematic Literature Review (SLR) method with the PRISMA approach. Literature was obtained through the Scopus database.

Results: The results showed that the presence of opponents (competitors) tends to improve athlete performance in competitive situations.

Conclusions: Social presence is an important determinant of sports performance. The effect is contextual, depending on task complexity and individual preparedness. This research emphasizes the importance of extending the study to more diverse cultural contexts, including Indonesia, as well as integrating social aspects in the design of training and sport interventions.

Keywords

Social facilitation, audience, systematic literature review, sport, performance.

Resumen

Introducción: Desde hace tiempo se cree que la presencia de espectadores en el deporte influye en el rendimiento de los deportistas, tanto como fuente de motivación como de presión psicológica. Este fenómeno se explica a través de la teoría de la facilitación social, que afirma que la presencia social puede aumentar o disminuir el rendimiento.

Objetivo: El objetivo de este estudio es mapear la evidencia empírica reciente sobre la influencia de la presencia de espectadores, oponentes y compañeros en el rendimiento de los atletas, y evaluar la relevancia de la teoría de la facilitación social en el contexto del deporte moderno.

Metodología: El estudio utilizó el método de Revisión Sistemática de la Literatura (SLR) con el enfoque PRISMA. La literatura se obtuvo a través de la base de datos Scopus.

Resultados: Los resultados mostraron que la presencia de oponentes (competidores) tiende a mejorar el rendimiento del deportista en situaciones competitivas.

Conclusiones: La presencia social es un determinante importante del rendimiento deportivo. El efecto es contextual, dependiendo de la complejidad de la tarea y de la preparación individual. Esta investigación subraya la importancia de ampliar el estudio a contextos culturales más diversos, incluida Indonesia, así como de integrar los aspectos sociales en el diseño de intervenciones de entrenamiento y deporte.

Palabras clave

Facilitación social, público, revisión bibliográfica sistemática, deporte, rendimiento.

Introduction

In the world of sport, athletes not only compete against opponents, but also interact with the social environment including spectators (Engler et al., 2024). The presence of spectators has become a critical factor affecting performance, both as a source of motivation and psychological pressure (Leishman, 2022). This phenomenon is particularly relevant in Indonesia, where the enthusiasm of sports spectators, particularly soccer, often reaches extraordinary levels (Arrum et.al, 2025; Rohman, 2020). For example, according to the official ticket sales data of the Indonesian national team, Garuda ID, more than 70,000 tickets were sold out when the Indonesian national team played Bahrain in the 2026 World Cup Qualifier at Gelora Bung Karno Stadium (Bola.com, 2024). Of course, this creates a very tense match atmosphere. However, behind this euphoria, a critical question arises: What is the psychological effect and performance of players when they play in front of tens of thousands of spectators?

This phenomenon has attracted researchers' attention since the early 20th century on the presence of others, when Triplett (1898) observed a bicycle racer would be faster when he was competing than alone. This phenomenon has been explained by Zajonc's (1965) social facilitation theory which explains that the presence of other people or spectators increases arousal, if the athlete's skills are automatic the audience will improve performance. Conversely, in complex or untrained tasks arousal actually interferes with concentration. However, some elite athletes who have been trained recognize that the impact of the audience is not always positive. Elite athletes such as Simone Biles (Tokyo 2020 Olympics) and Tinnys Sandgren (US Open 2020) openly admit that crowd pressure can trigger anxiety and choking (BBC Sport, 2021). These contradictions suggest that spectator influence is complex and contextual, requiring systematic studies to understand the underlying psychological mechanisms (Lee et al., 2021). This finding is in line with research conducted by Mesagno & Beckmann (2017) reporting that audience pressure actually triggers anxiety and choking under pressure.

In addition, the digital age complicates the dynamics of interactions between athletes and spectators (Glebova et al., 2022). Especially during the COVID-19 pandemic, which must force matches not to be attended by live spectators but can only be witnessed virtually through platforms such as Youtube, Twitter and Instagram (Herold et al., 2021). This phenomenon can create a virtual audience that can provide instant feedback during the competition, but cannot be felt directly by the athlete during the match (Xu et al., 2023). This raises a new question: will the absence of spectators benefit or harm athletes? Some studies such as Hill & Yperen's (2021) analysis of European soccer matches suggest that home teams lose "home advantage", confirming the role of spectators in creating psychological pressure for visiting teams. But the above phenomenon also needs to be considered.

Therefore, this Systematic Literature Review (SLR) was designed to map the latest evidence on the effect of spectator attendance on athlete performance. The research aims to provide an updated theoretical framework and practical recommendations for crowd pressure management in athlete training. This research will also prove whether Zajonc's (1965) social facilitation theory is still relevant today.

Social facilitation

Conceptually, social facilitation refers to the phenomenon whereby the presence of others affects individual performance, either in the form of increased or decreased performance, depending on the nature of the task being performed (Feinberg & Aiello, 2006). The term was first coined to explain the tendency for individuals to perform better when witnessed by others than when performing alone (Zajonc, 1965). The main psychological mechanism underlying this phenomenon is the increased arousal or physiological activation caused by social presence, which then reinforces the dominant response, i.e. the most likely reaction or behavior in a given situation (Zajonc, 1965). If the individual is facing a well-mastered or simple task, increased arousal will improve performance. On the contrary, if the task is complex, new, or untrained, arousal can actually disrupt concentration and cause a decrease in performance. Therefore, social facilitation not only explains the impact of social activity in competitive contexts, but also in everyday activities, such as studying, working, or exercising (Chib et al., 2018).

In addition to social evaluation factors, the presence of others can also lead to performance pressure or evaluation apprehension, which amplifies the effects of social facilitation (Cottrell, 1972). In recent theoretical developments, this concept has been extended to include not only the physical presence of others, but also virtual presence, such as in the context of online work or social media (Sterna et al., 2019).



This suggests that social influences on performance are broad and relevant in various contexts of modern life, making social facilitation one of the central concepts in contemporary social psychology.

In addition, there are several important factors that are evaluated in the context of social facilitation, namely task complexity, skill proficiency level, relevant audience, and individual sensitivity to pressure (Bond & Titus, 1983). Professional athletes who have mastered their skills benefit from the presence of an audience through increased focus, reaction speed, and competitive motivation. Research indicates that social support from spectators can enhance athletic performance, contributing to better outcomes in competitions (Woods et al., 2022). The presence of spectators can also increase feelings of responsibility, social identity, and emotional intensity, which can impact performance during competitive situations (Salovaara et al., 2021).

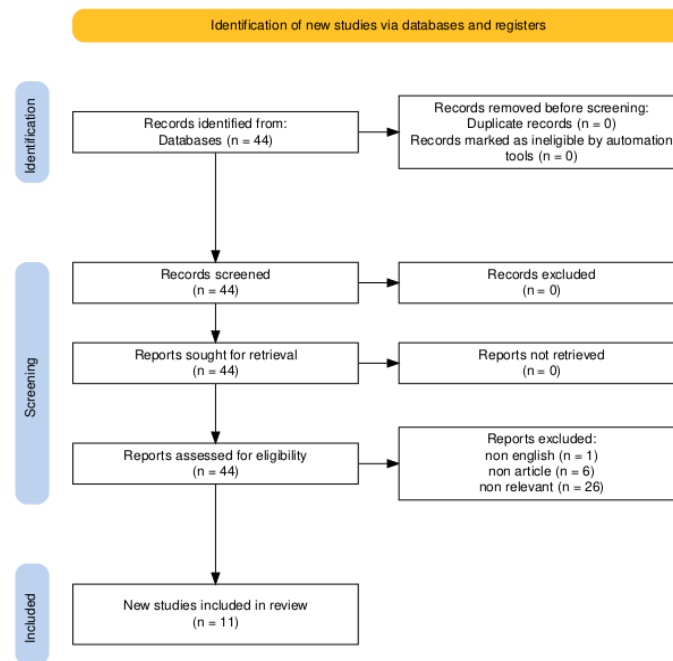
Through this theory, it is important to understand that these factors are crucial for designing appropriate psychological interventions, such as conducting mental training based on simulations of the presence of others or spectators, to optimally leverage the effects of social facilitation in sports contexts. Based on this literature review, the theory of social facilitation can be concluded that the presence of spectators or competitors can enhance athletes' performance, especially in tasks that have been trained. However, when social pressure is not managed properly, the presence of others may actually reduce performance. Therefore, this topic is crucial for understanding the psychological dynamics of athletes when competing under public scrutiny.

Method

This research method uses a systematic literature review (SLR) to comprehensively analyze the impact of social facilitation in a sport context with a structured and replicable approach (Snyder, 2019). The literature search was conducted through the Scopus database, which was chosen for its broad coverage of global and regional scientific publications and its reputation for providing high-quality sources (Baas et al., 2020). The selection phase began with a search using the keywords "social facilitation" AND "Sport", resulting in 44 documents, which were then filtered based on the inclusion criteria: (1) only journal articles and (2) English language, leaving 37 articles for in-depth analysis. The advantage of SLR in this study lies in its ability to minimize bias through clear search protocols, transparency in literature selection, and systematic synthesis of findings, thus providing a stronger empirical foundation than traditional narrative reviews (Kitchenham & Charters, 2007). In addition, SLR enables the identification of research gaps and consistent patterns in the literature, which is useful for both theory and practice development in the field of sport psychology.

Then, we systematically analyzed whether the articles were relevant based on the research content. There were 26 articles that were not relevant to the research theme, so we only obtained 11 articles. This literature search process we used PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). Figure 1 shows the process of selecting and reviewing the articles used in this study.

Figure 1. Flow diagram



Results

This systematic review identified 11 scientific articles that explored the influence of spectators on sports performance. In this section, we present the results of our descriptive analysis of the collected articles. Initially, we organize them by year of publication, research focus, publisher and methodology. First, the publication years of the articles we collected ranged from 2005 to 2024. This result shows that research on the presence of spectators or opponents on athlete performance is still developing today. In fact, this phenomenon first appeared by Tripllet for almost a century, but it is still relevant today. However, the effects of the digital age have made the dynamics of presence shift from the audience being present on the field to virtual. This makes this theory even more interesting to discuss today. This research can provide valuable insights for the development of more effective training strategies for athletes, as well as improving the spectator experience at sporting events.

Next, we will present the research focus based on the articles we have collected. In this result, the research focus has variations. The focus on the articles we discussed was not only limited to professional athletes, but there were also novice athletes and even individuals who were only active in sports. In addition, there is an interesting focus on analyzing videos to analyze athlete performance. This finding is interesting, because social facilitation not only explains social impact in competitive contexts, but also in everyday activities, such as studying, working, and exercising (Chib et al., 2018).

Then, we will present the results based on the publisher. It can be seen from table 1 that publishers who publish themes about social facilitation or the presence of others vary. This means that this theme is quite interesting, so publishers are interested in publishing themes related to this. This theme shows the relevance of research in the context of scientific publications, which are increasingly important for increasing understanding in the field of sports. The involvement of spectators and opponents in athlete performance also reflects the need to develop better strategies in training.

Table 1. Research source

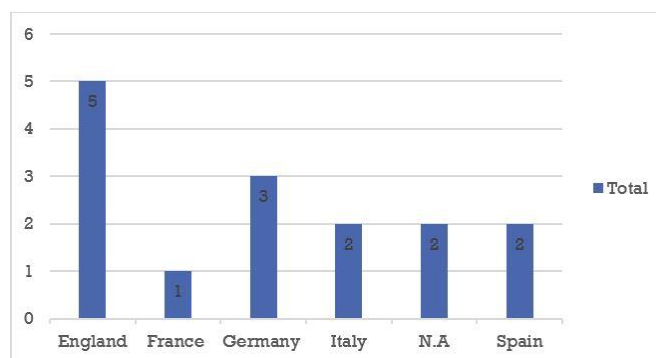
Author	Source Title
Thomas et al (2018)	Martial art studies
Michael & Strube (2005)	The American Journal of Psychology
Sánchez et al. (2009)	Perceptual and Motor Skills
Jiménez Sánchez & Lavín (2021)	Soccer & Society
Hill & Van Yperen (2021)	Frontiers in Psychology
Gardner et al. (2009)	Developmental Psychology

Furley et al (2023)
Engler et al. (2024)
Davis et al. (2021)
Corbett et al (2012)
Blomqvist et al (2020)

European Journal of Social Psychology
German Journal of Exercise and Sport Research
Plos one
Medicine & Science in Sports & Exercise
Revista de Artes Marciales Asiáticas

We also show the countries where the research was conducted. As can be seen in Figure 2, the country that dominates conducting research related to this theme is England, followed by Germany, and then Italy and Spain, while there are 2 studies that do not explain the location of the research. From these results, it can be concluded that this research is dominated by countries in Europe. This suggests that similar research needs to be conducted in other countries such as Indonesia to broaden the understanding of the influence of spectator attendance on athletes in diverse cultural contexts. Research in other countries will provide a different and more comprehensive perspective.

Figure 2. Research location



Based on the research methodology, the article is dominated by experimental research. This is natural considering that the beginning of this theory was also carried out using experimental methodology. However, interestingly, there are ways of conducting experiments that are different from the original theory, such as research conducted by Furley et al (2023) using video. Participants were asked to watch a short video, then the researcher would assess the expressions of the participants to be assessed. This further strengthens that the effects of digitization can affect social facilitation. This research can illustrate that innovative experimental methods can provide new insights in understanding social phenomena, especially the context of digitization and social interaction.

Table 2. List of articles reviewed

Author (Year)	Population and Sample	Methods	Attendance Type	Country	Result and Recommendations
Thomas et al (2018)	17 club-level karateka (9 boys, 8 girls; 6 aged under 16 years, 11 aged 16+ years).	Experiment	Opponent and Spectator	North England	<p>Results:</p> <p>This study confirmed that co-action competition (performing kata with others) improved performance scores compared to solo performance.</p> <p>Both males and females showed improved performance in co-action situations, but the improvement was greater for females. Older participants (16+ years) benefitted more from co-action than younger participants.</p> <p>Word, as a frequently practiced task, showed improved performance in co-action situations.</p> <p>Further research with larger samples and additional psychological measures to understand the mechanisms behind these differences.</p>
Michael & Strube (2005)	40 children (14 boys, 26 girls). Age: 8-17 years (mean ~12 years).	Experiment	Opposite	unknown	<p>Results :</p> <p>There was no significant difference between own and competition performance across all trials.</p> <p>There was no significant interaction between age and competition conditions.</p> <p>women are more stimulated by competition was not statistically proven.</p>



Table 2. List of articles reviewed

Author (Year)	Population and Sample	Methods	Attendance Type	Country	Result and Recommendations
					There was criticism of the Social facilitation results by Norman Triplett (1898). This study therefore recommends Historical vs. Modern Publication standards: emphasizing that Triplett's experiment may not pass current statistical standards. Selection Bias: Triplett's data only reported 40 out of 225 participants. Future studies need transparency in data reporting.
Sánchez et al. (2009)	Match data from the top two divisions of professional soccer in Spain. A total of 38,024 matches from the 1928-29 to 2006-07 seasons	Descriptive and longitudinal, with a historical retrospective approach to match	Spectators	Spain	<p>Results:</p> <p>A significant home advantage was found</p> <p>Research on home advantage is more multidimensional and takes into account both psychological, social, and tactical factors that have not been fully explored.</p>
Jiménez Sánchez & Lavín (2021)	1,424 professional soccer matches that took place behind closed doors (without spectators) due to the COVID-19 pandemic in 2020. Data collected from the top five European leagues	Quasi Experiment	Spectators	Germany, Spain, England, Italy, France	<p>Results:</p> <p>Home advantage is significantly reduced in matches played behind closed doors.</p> <p>The number of wins for the home team decreases, while draws and wins for the away team increase during periods without spectators.</p> <p>Referees tend to be more neutral in making decisions when there is no pressure from the audience.</p> <p>Analyzing factors other than spectators that affect home advantage, Using methods and data from different leagues and seasons, expanding data coverage across time and countries to better understand the cross-cultural and structural dynamics of home advantage change, Examining the psychological role of players and officials in matches without spectators, suggesting experimental or qualitative studies that could reveal the subjective experiences of players, coaches and referees in conditions without crowd support.</p>
Hill & Van Yperen (2021)	Professional football match data from the major leagues in Europe. The matches analyzed were 484 matches without spectators and a total of 1,206 matches for comparison (with spectators).	Quantitative comparative with pre-post analysis approach	Spectators	Germany, Spain, England, Italy	<p>Results:</p> <p>Home advantage is strongly influenced by crowd attendance, and when that element is removed due to the pandemic, the advantage is also drastically reduced.</p> <p>Investigating the psychological mechanisms of players and officials, using mixed-methods, testing whether these changes are permanent or temporary, the level of competition, and extending the analysis to specific aspects of performance.</p>
Gardner et al. (2009)	6,504 adolescents who are junior and senior high school students (SMP and SMA)	Quantitative correlation based on longitudinal survey data.	Peers	United States	<p>Results:</p> <p>Peers play an important role: adolescents participating in sport</p> <p>Examining more deeply the role of peer relationship quality in sport for future studies to focus on relationship characteristics in the context of sports teams</p>
Furley et al (2023)	241 participants (128 male, 110 females, 3 did not report gender)	Participants watched short video clips of soccer players	Spectators	Germany	<p>Results:</p> <p>The presence of spectators reinforced positive expressions when the team was winning (social facilitation) but inhibited negative expressions when the team was losing (social inhibition).</p> <p>Recommendations:</p> <p>Expand Sport and Non-Sport Contexts</p> <p>Variation of Spectator Conditions</p> <p>Integration with Motion Tracking Technology</p> <p>Psychological and personality factors</p> <p>Longitudinal design and competitive context</p>
Engler et al. (2024)	15 female dancers	Experiment <i>Within-subject</i>	Spectators	Germany	<p>Results:</p> <p>Spectator pressure occurs during training but not during competition, as they have not mastered the task during training.</p> <p>Recommendations</p>



Table 2. List of articles reviewed

Author (Year)	Population and Sample	Methods	Attendance Type	Country	Result and Recommendations
					Expand the sample and group variations such as gender, skill level and dance type. Deepen Psychological Measures such as Anxiety and Cognition. Exploring the Role of the Audience in More Detail Task Classification: such as mapping dance types based on complexity
Davis et al. (2021)	144 parkrun participants (70 female, 74 male) 19-19 years old	Observational and survey	Spectators	England	<p>Results: Social factors (community support, pre-run interactions, presence of friends/family) significantly increased enjoyment and energy during the run.</p> <p>Recommendations Facilitate pre-run activities (e.g., group warm-up or socialization sessions) to strengthen social bonds. Strengthen the Sense of Community: Build an inclusive and supportive environment, for example by providing volunteers who welcome new participants or organizing post-run events. Harness the Energy Effect Convey the message that social interaction can make running feel more fun and energizing, without the need to increase effort.</p>
Corbett et al (2012)	14 men are not trained cyclists but exercise regularly	Experiment	Opponent	England	<p>Results: Travel time, power and heart rate during head to head were faster than time trial.</p> <p>Recommendations Elite population: Research whether trained athletes show similar responses or have maximized energy reserves. Other Sports: Testing the effects of Head to Head competition on other endurance sports (e.g., running, swimming). Technological Interventions: Utilize virtual reality for a more realistic simulation of the competition.</p>
Blomqvist et al (2020)	86 fighters who competed during COVID-19 were collected and compared to previous competition history (73 males and 13 females)	Comparative	Spectators	N.A	<p>Results: MMA fighters who won fights without spectators performed worse in previous fights attended by spectators.</p> <p>Recommended For MMA athletes Training with a Simulated Audience: Athletes who are likely to experience reduced performance due to the presence of an audience are advised to train in an environment that mimics competition conditions (e.g., sparring in front of a small audience or teammates). This can help reduce anxiety and improve adaptation to external pressure. Exposure Therapy For coaches and support teams, focus on cognitive skills as MMA involves complex tasks. Evaluation of Athlete's Response to Spectators.</p>

The role of audience, opponents and peers on performance

The findings from these studies can be grouped into three broad themes, namely: (1) opponent presence (co-action and direct competition), (2) spectators (crowd effect and home advantage), and (3) peer influence in physical activity and recreational sports. First, the presence of opponents has been shown to improve performance in a variety of sport contexts, especially in competition scenarios. Thomas et al. (2018) found that the presence of a real opponent encouraged athletes to achieve higher speed and power output in a cycling sprint test. Similarly, Corbett et al. (2012) showed that athletes showed a significant performance improvement when competing directly against another person than when competing against a digital avatar. This supports social facilitation theory, where the presence of competitors strengthens athletes' intrinsic and extrinsic motivation.

Second, spectator presence has a more complex effect. Observational and quasi-experimental studies during the COVID-19 pandemic revealed that the home team's performance tends to decline when

matches take place without spectators, as shown by Jiménez Sánchez and Lavín (2021) and Hill and Van Yperen (2021). The presence of spectators has also been shown to affect refereeing decisions, with an increase in the number of fouls awarded to the away team when spectators are present (Morita & Araki, 2023; Pettersson-Lidbom & Priks, 2010). However, not all effects of spectator presence are positive. As research conducted by Engler et al. (2024) found that athletes' performance decreased when under conditions of high social pressure in the presence of spectators, especially on tasks that had not been automated.

Third, peer influence shows an important role in the context of daily physical activity. Quantitative studies by Davis et al. (2021) and Gardner et al. (2009) show that social support from peers increases physical activity frequency, enjoyment and perceived energy during exercise. These results emphasize the importance of a positive social environment in shaping physically active habits, particularly among adolescents and the general population. A supportive environment can contribute to increased active physical habits, making it important to create an atmosphere that motivates individuals to participate in regular physical activity.

Discussion

This study aims to see how the audience affects an athlete's performance using a literature review. Overall, these results confirm that the presence of others is an important social determinant of sports performance. This finding is consistent with the framework of social facilitation theory (Zajonc, 1965), which states that the presence of an audience or competitor can improve performance on tasks that have been mastered, but can worsen performance on complex or poorly mastered tasks. The influence of competitors in the form of co-action shows that individuals tend to work harder when they feel they are competing directly. This finding supports the idea that competition is not only external, but also evokes psychophysiological responses that increase physical output (Corbett et al., 2012). However, this improved performance is highly dependent on the context and level of athlete readiness. In contrast, the presence of spectators produces a more ambivalent effect. On the one hand, the presence of spectators supports the concept of home advantage, strengthens fighting spirit, and even indirectly influences referee decisions.

On the other hand, high performance pressure due to social expectations can create performance anxiety, especially in tasks that require cognitive precision. This is in accordance with the findings of Bozhinov & Grote (2018), which showed that social pressure can worsen performance even in professional athletes. The presence of spectators in sports activities can provide a complex picture, affecting both the motivation and the athlete's anxiety when facing competitive challenges.

Meanwhile, social support from peers has a different nuance, not in the context of competition, but in terms of increasing motivation and sustainability of physical activity. Studies examining these social factors emphasize the importance of affiliation, social acceptance, and shared enjoyment in physical activity, especially outside the competitive environment (Davis et al., 2021; Gardner et al., 2009). Thus, intervention approaches to increasing physical activity in the community can consider strengthening social relations as an effective strategy.

Other results from this literature review also show that research on social facilitation in the field of sport is mostly dominated by European countries. Countries such as Germany, the Netherlands, England, and France have strong roots in experimental psychology, which is the main method in the study of social facilitation. This is evident from research conducted by Max Ringelmann in the 1880s examining the effects of the presence of others on physical performance, known as the Ringelmann Effect, one of the earliest studies on social loafing and facilitation.

With these findings in mind, it is important for coaches, sports educators, and physical activity program designers to focus not only on the technical and physiological aspects, but also on the social dimensions that accompany physical activity. Whether in a competitive or recreational context, the presence of others can be a reinforcing or inhibiting factor depending on the psychological dynamics of the individual concerned.

Conclusions

The conclusions of this systematic review confirm that the presence of spectators, opponents, and peers play an important role in influencing athlete's performance through social facilitation mechanisms. The presence of competitors tends to enhance performance, especially in the context of live competition, while the presence of spectators shows a more complex effect—it can be both motivating and stressful, leading to decreased performance, especially in non-automated tasks. In contrast, social support from peers has been shown to increase the motivation and sustainability of physical activity, especially in non-competitive contexts.

The results also show that the existing literature is still dominated by European countries and experimental approaches, indicating the need to expand the cultural and methodological context in future research. Therefore, it is important for coaches, sports educators, and policy-makers to consider not only the technical aspects of training, but also the social and psychological dimensions that influence overall athlete performance.

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