



Peers' Influence on Student Motivation and Performance in Physical Education and Sport Sciences: A Systematic Review

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ABSTRACT

Peers belong to the group of those individuals who have the ability to influence significantly on the lives of their fellow peers. Both their positive and negative attitudes and behaviours have been suggested to shape the overall development of an individual especially during their formative years. However, no prior systematic review has been conducted in the past to assess the influence of peers on student motivation and its association with academic learning and physical performance in the realm of physical education, thus highlighting a significant research gap. Therefore, this study was designed to examine the probable influence of peers on student motivation and performance in the realm of Physical Education and Sports Sciences. Various well-regarded research databases were adopted to carry out this systematic search. The identification of the most suitable articles was conducted following the PRISMA guidelines. This comprehensive review was based on the pre-established criteria set for the selection of the studies. After the completion of quality evaluation procedure, only 9 studies could make it to the final sample of the review. Eight out of the nine included studies supported the view that peers' influence positively on student motivation, leading to improved academic learning and physical performance of physical education students. In contrast, only one study was of the view that peers influenced negatively on student motivation, thus lowering their academic learning and physical performance. Taking these findings into account, there is ample evidence to suggest that peers might influence positively on student motivation, therefore, improving their academic learning and physical performance of physical education students.

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1. Introduction

During a student's academic journey, learning plays a pivotal role in improving their grades and preparing them for future challenges (Chen & Wu, 2021). It involves the process of assessing and understanding knowledge attained throughout their educational career (Lim et al., 2021). Along this journey, students may develop problem-solving skills and cognitive abilities that may help in the promotion of comprehension (Warsah et al., 2021). It doesn't only revolve around sitting in the classroom and taking lessons, rather it extends beyond the informal learning opportunities (Shoaib, Abdullah, & Ali, 2021). The most common myth regarding academic learning is that it is mostly limited to cramming or memorization. However, in reality, it encompasses the proper understanding of the actual concept and then utilizing that acquired knowledge in various contexts of life (Kiltz et al., 2024). While academic learning is very crucial for students, however, insufficient physical activity levels can have detrimental effects on

student's academic life and overall well-being (Lynch, O'Donoghue, & Peiris, 2022). Physical activity can be described as any type of muscular movement or activity that increases the expenditure of energy (Dhuli et al., 2022). Regular participation in physical activity has been suggested to enhance the physical fitness of individuals by improving their cardiovascular health, developing strength and increasing flexibility levels (Nuriddinov, 2023). Additionally, it has been observed that frequent physical exercise might also play a crucial and substantial role in improving the overall health and well-being of individuals, especially during their student life (Kljajević et al., 2021). Apart from developing physical fitness, regular exercise has been recommended to improve the cognitive functioning of the brain. This might further aid in sharpening memory and enhancing concentration levels of the individuals thus improving their academic learning (Sewell et al., 2021). However, most of the academic subjects solely focus on building the cognitive health of students and neglect the inclusion of physical activity in their lives.

In contrast, the subject of physical education has emerged as a leading programme due to its well-rounded educational curriculum (Akramovich & Nazirjonovich, 2023). Unlike other educational programmes, it isn't solely dependent on academic learning but also involves physical activity and skill development (Habyarimana, Tugirumukiza, & Zhou, 2022). Apart from improving the cognitive abilities of students, it also promotes the development of motor skills and teamwork among them (Bailey et al., 2009). Physical Education has also been observed to promote ethics and values regarding fair play and leadership among students which are an essential part of a person's life (Bayer & Gadarova, 2024). Furthermore, exercising regularly and improving physical performance is also a mandatory component in the life of a PESS student. However, maintaining a balance between both academic learning and physical performance is nearly impossible in the absence of motivation. Motivation is a type of force, that inspires individuals from within and aids them in facing obstacles of life persistently (Fishbach & Woolley, 2022). It is of utmost importance for students studying physical education to maintain consistency between physical performance and intellectual learning (Wang, 2023). It provides students with energy and determination that is considered mandatory to tackle challenges and stay preserved during these harsh times (Mendes et al.). However, motivation isn't solely a naturally occurring phenomenon, rather it is influenced by various external factors. These factors might include rewards, pressures, deadlines, expectations, competition, feedback and various other social influences (Esra & Sevilen, 2021). As a matter of fact, these social influences also can significantly shape a student's motivation, particularly from external sources such as peers. There are several theories that have been proposed by renowned experts in the past which connect peers' influence with student motivation and learning. For instance, a theory named "Social Learning Theory" which was proposed by Albert Bandura suggested that most of the individuals learn behaviours and attitudes by observing their fellow peers whom they imitate as their role models (Bandura, 1977). In a similar realm, Peer Learning Theory as mentioned in a study by McGloin (2009) also suggested that a group of peers have the ability to exert a significant amount of pressure in the lives of their fellow peers which either enhances or reduces their motivation level and performance. However, both these theories require further empirical evidence to better understand the mechanism through which peer influence operates and influences the overall development and performance of an individual.

Peers are one such people who have better knowledge and understanding of the situation as they often share similar experiences and challenges (Laursen & Veenstra, 2021). They are well aware of what their classmate or companion is going through in life and how he could improve his learning or performance (Latifi et al., 2021). Their feedback, assessment and tutoring are all of significant importance as these attributes can shape the outcome either positive or negative (Laursen & Veenstra, 2021). If positive, it is intended to improve the thinking process and comprehension of the subject matter and also promotes physical performance (Müller et al., 2021). Whereas, if negative, it can lead to demotivation, which is a prime factor in hindering the cognitive and physical health and performance of individuals (Prinstein & Giletta, 2021). It may further disengage students from their studies and sports causing a long-term impact on their overall well-being (Zong, Schunn, & Wang, 2021). However, no prior systematic review has been conducted in the past to assess the influence of peers on student motivation and its association with academic learning and physical performance in the realm of physical education, thus highlighting a significant research gap. Hence, the primary purpose of this study was to identify the exact influence of peers in shaping student motivation and its impact on learning and

performance in PESS. Through a thorough examination of the current literature, this study seeks to provide valuable insights for the future. The findings of this study might aid the relevant professionals, educators and policymakers in improving the dynamics of peers to enhance the academic learning and physical performance of students. It might also aid in developing instructional practices and improve the educational experience of PESS students globally.

2. Methods

2.1. Data Search Strategy

The identification of the most suitable articles was conducted following the PRISMA guidelines (Page et al., 2021). Two independent reviewers MA and AA were responsible for conducting an extensive online search of databases with the assistance of an assistant librarian at Government College University Lahore to search for relevant articles. Various well-regarded research databases including Sage, The Cochrane Library, ERIC, ScienceDirect, PubMed, and SportDiscus were used to carry out this systematic search. These databases were selected due to their high reputation and access. The key terminologies or search terms that were used in the process of searching were "peers" OR "fellow students" OR "classmates" AND "motivation", OR "learning" OR "performance" AND "physical education" OR "sport science". The English language filter was applied to screen out only those articles that were published in English. Additionally, FA searched Google Scholar and JSTOR to find grey literature.

2.2. Criteria to Include and Exclude studies

Only those studies that met the following criteria were made part of the review:

- Studies that discussed the influence of peers on motivation, learning and performance in the realm of physical education and sports sciences.
- Studies that were written in the English language and were published in highly reputed journals that were recognised globally.
- Studies that have research designs such as qualitative, cross-sectional, longitudinal, experimental and randomized control trials.
- Studies or articles which were accessible in the form of full texts.

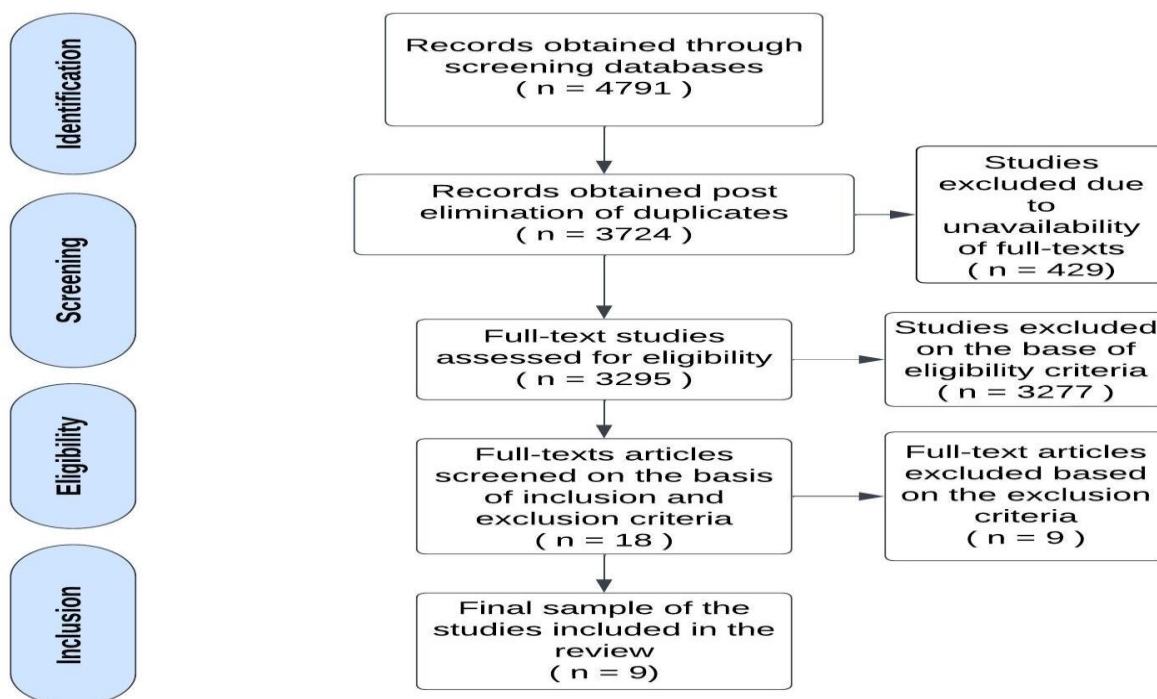
Norms for the exclusion of the studies are as follows:

- Studies that had either of the variables (relevant to this topic) missing from the context.
- Chapters, thesis and books were excluded due to the need to focus on peer-reviewed journal articles to ensure the inclusion of up-to-date and rigorously assessed research.
- Studies that were available in the form of incomplete texts.
- Case studies and reviews that were already present in published form.

2.3. Selection Procedure and Data Extraction

As the initial process of screening was completed, the first author FA's responsibility removed duplicate studies and reviewed the titles and abstracts of the retrieved studies. The second author AA was then responsible for extensively examining the remaining studies, in line with the previously described selection criteria. In case of any disagreement, the third author MA was responsible for resolving the differences and making a final decision. The detailed procedure for the selection of the studies is presented in Figure 1. Lastly, FA was also responsible for extracting characteristics from the final sample of studies to construct a summary table. These characteristics included study authors and country, sample size, design of the study, a tool to assess peer's influence, data analysis and outcomes of the study. Once completed, the second author AA was responsible for tallying the extracted data with the original information to eliminate any errors or omissions in the table.

Figure 1: Illustration of the screening process of studies in accordance with “PRISMA guidelines (Page et al., 2021)”



2.4. Approach to assess the quality assessment of studies

One author MA was responsible for assessing the quality of qualitative and cross-sectional studies. The quality assessment of qualitative studies was conducted using COREQ tool (Tong, Sainsbury, & Craig, 2007) whereas, the Newcastle-Ottawa scale for cross-sectional studies (NOS) (Herzog et al., 2013) was utilized to assess the quality of cross-sectional studies. Both these tools were chosen due to their high validity and esteemed reputation. Furthermore, they have extensively been used in previous studies including (Anderson et al., 2014; Bailey et al., 2018; Overbeck, Davidsen, & Kousgaard, 2016; Rodríguez et al., 2016; Wang et al., 2017). Secondly, the other author AA responsibly assessed the methodological quality of longitudinal and quasi-experimental studies using the Critical Appraisal Skills Programme (CASP, 2018) and JBI Critical Appraisal Checklist for quasi-experimental studies (Barker et al., 2024) respectively.

3. Results

The study adopted a rigorous screening process comprising 4791 abstracts and their titles. After the completion of the initial process of screening which included eliminating duplicates and ineligible articles, only 18 studies were able to make it to the next stage. However, after eliminating all irrelevant articles that didn't adhere to the pre-established inclusion criteria, only 9 relevant full-text studies were retrieved.

3.1. Characteristics of the Studies

A detailed summarization of each study is presented in Table 1.

3.1.1. Qualitative (n=5) and cross-sectional (n=1) studies.

The final sample of the studies included five studies (Alstot, 2018; Keegan et al., 2010; Keegan et al., 2009; Liu & Carless, 2006; Østergaard & Curth, 2014) that were designed as qualitative. These studies were deemed eligible as they fulfilled all the inclusion criteria. Most of these qualitative studies were performed on adolescents who were either enrolled in schools, colleges or universities. All these qualitative studies comprised a total of 2371 PESS students that ranged from 14 (least number of participants) to 1740 (highest number of participants). None of these qualitative studies included only the male or female population as a sample. All of these studies were comprised of either fully structured or semi-structured interviews along with video recordings to assess the variables. Furthermore, only 1 cross-sectional study (Vazou, Ntoumanis, & Duda, 2006) could fulfil the eligibility criteria and thus was included in the final

sample of the review. The study included 493 young athletes, who belonged to the PESS department. Additionally, these student-athletes belonged to both individual and team sports having ages ranging between 12 and 17 years. It had both female and male populations as part of the sample.

Table 1: Characteristics of the studies included in the review

Study authors and country	Sample size	Design of the study	Tool to assess peer's influence	Data Analysis	Outcomes of the study
(Østergaard & Curth, 2014) Denmark	14 high school students (8 male and 6 female)	Qualitative	A semi-structured interview	Interpretative phenomenology analysis	Improvement in volleyball skills was observed due to an increase in motivation because of peer feedback
(Alstot, 2018) Pacific Northwest	38 elementary school students (male=19, female=19)	Qualitative	Video recording	One-way ANOVA	With higher grades, students indicated relatively more accurate peer feedback thus impacting positively learning and performance
(Keegan et al., 2009) United Kingdom	40 local school students (21 male and 19 female)	Qualitative	Interview	Inductive content analysis	Peers were observed to have a positive influence on motivational climate due to their competitive behaviour.
(Keegan et al., 2010) United Kingdom	79 student-athletes (43 male and 36 female) from local schools	Qualitative	A semi-structured interview	QSR N-Vivo version 7 qualitative analysis software	The competitive behaviour of peers was one of the primary motivators for student-athletes
(Liu & Carless, 2006) Hong Kong	1740 tertiary students from Hong Kong	Qualitative	Interview based	Inductive content analysis	The findings suggest that peers were suggested to have a negative influence on student motivation leading to poor academic learning only if they graded their fellow peers.
(Kuo et al., 2017) Taiwan	42 undergraduate students (27 female and 15 male)	Quasi-experimental	Self-efficacy measure and learning motivation measure	Paired sample t-tests and ANOVA	As a result of the integration of peer feedback, increased motivation, self-efficacy and academic learning were observed among PE students
(d'Arripe-Longueville et al., 2002) Paris	48 high school students	Quasi-experimental	Personal Standards Evaluation Questionnaire	Interobserver agreement (IOA), ANOVA and MANOVA	Skilled peer tutors led to increased motivation levels and improved performance
(Warburton, 2017) United Kingdom	655 students in Years 7, 8, and 9 of a secondary school	Longitudinal	21-item MCYSQ	Peer independent samples t-test and multilevel modelling	Peers were suggested to influence positively on the motivational climate of students thus improving their performance
(Vazou, Ntoumanis, & Duda, 2006) England	493 participants (male=369 and female) belonging to different school clubs and county teams.	Cross-sectional	21-item MCYSQ (PMCSQ-2)	Peer and Hierarchical regression analyses and 2-way MANOVA	Peer-created climate was positively correlated with motivation-related responses that might improve academic learning.

3.1.2. Quasi-experimental (n = 2) and longitudinal studies (n = 1)

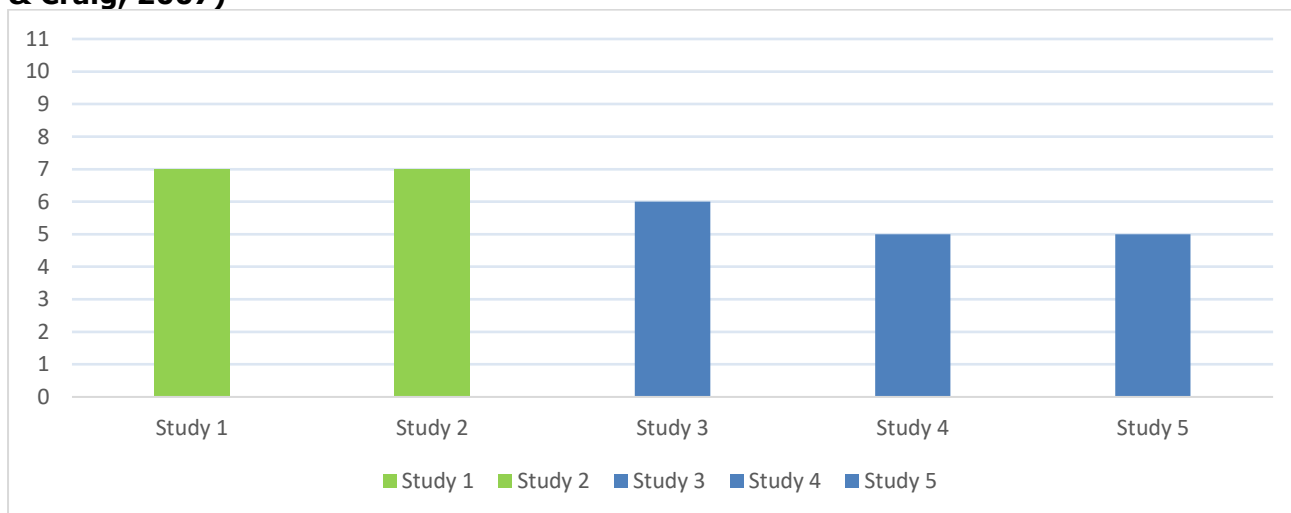
Two studies (d'Arripe-Longueville et al., 2002; Kuo et al., 2017) were identified as quasi-experimental, which is considered one of the stronger study designs in research. The studies consisted of 90 high school and college students having an average age range of 19 years. These studies were conducted in Paris and Taiwan with participants ranging from 42 to 48 in numbers. Additionally, only one longitudinal study (Warburton, 2017) could be discovered during the whole process of screening. This study included 655 students in years 7, 8, and 9 of a secondary school, studying Physical education classes in the United Kingdom. The ages that these participants ranged between 11 and 15 years.

3.2. Methodological Quality Evaluation

3.2.1. Qualitative studies (n = 5)

The quality assessment of qualitative studies is presented in Figure 2. Two out of the included five qualitative studies (Alstot, 2018; Østergaard & Curth, 2014) were suggested to have good methodological quality as they met 7 out of 10 requirements of the quality assessment tool. Lastly the remaining three studies (Keegan et al., 2010; Keegan et al., 2009; Liu & Carless, 2006) showed satisfactory methodological quality as one of them scored 6 whereas the remaining two scored 5 on the quality assessment scale respectively.

Figure 2: Quality assessment of Qualitative Studies using COREQ tool (Tong, Sainsbury, & Craig, 2007)



3.2.2. Quasi-experimental studies (n = 2)

A detailed illustration of the methodological quality assessment of quasi-experimental studies is presented in Table 2. Both the studies (d'Arripe-Longueville et al., 2002; Kuo et al., 2017) exhibited very good on the quality evaluation scale as they had 88% of the quality criteria fulfilled when published.

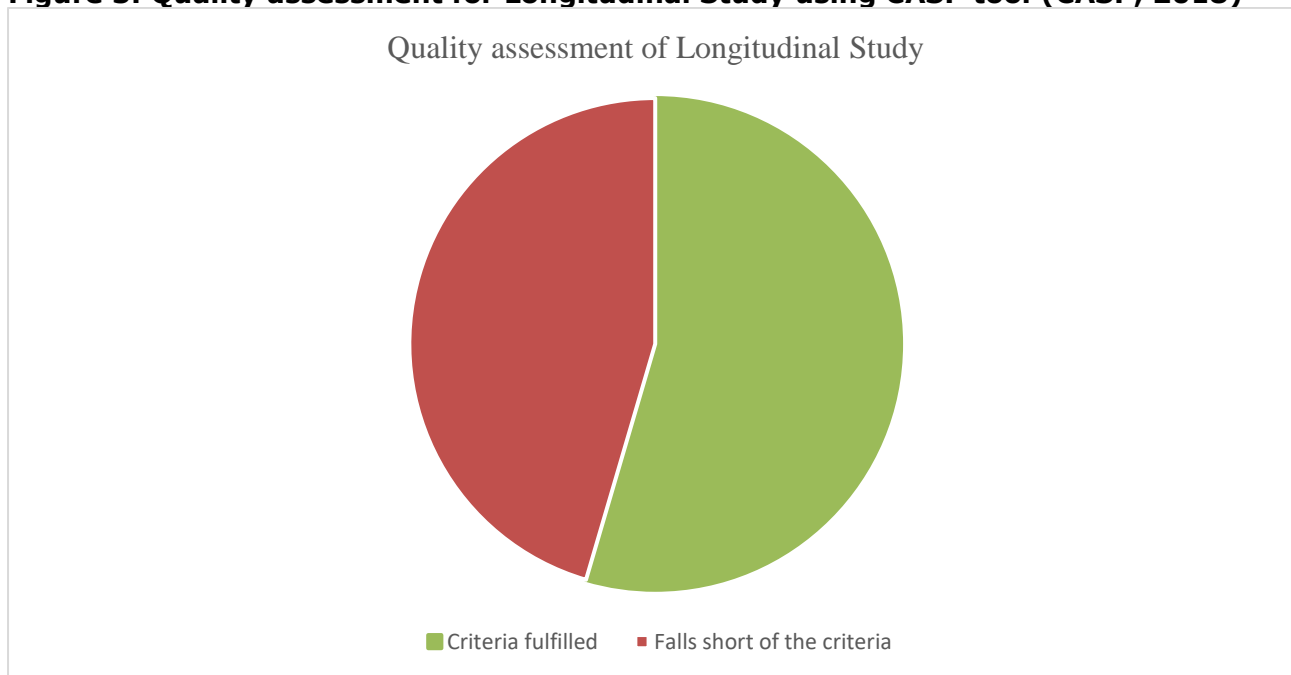
Table 2: Methodological quality assessment using JBI Critical Appraisal Checklist for Quasi-Experimental Studies (Barker et al., 2024).

Author	Clear research question	Comparisons of participants	Inclusion of participants in comparison group excluding exposure	of any group	Was there a comparison group?	Multiple measurements of the outcome	Follow up	Comparison of the outcome	Reliability of the outcomes	Statistical tool	Percentage %	Quality rating
(Kuo et al., 2017)	*	*	*	*	*	*	-	*	*	*	88%	Very Good
(d'Arripe-Longueville et al., 2002)	*	*	*	*	*	-	*	*	*	*	88%	Very Good

3.2.2. Longitudinal study (n = 1)

This review included only one longitudinal study (Warburton, 2017) which was evaluated using CASP tool (CASP, 2018) (See Figure 3 for details). The study exhibited satisfactory performance on the quality evaluation scale as it was able to fulfil 6 criteria of quality evaluation.

Figure 3: Quality assessment for Longitudinal Study using CASP tool (CASP, 2018)



3.2.3. Methodological quality assessment of Cross-sectional studies

The only cross-sectional study (Vazou, Ntoumanis, & Duda, 2006) included in this review showed good quality rating as it was able to score 7 on the quality evaluation scale. (See Table 3 for details).

Table 3: NOS for cross-sectional studies (Herzog et al., 2013)

Study	Screening			Comparison		Findings		Score	Evaluation
	1	2	3	4	5	6	7		
(Vazou, Ntoumanis, & Duda, 2006)	-	+	+	++	+	++	-	7	Good

4. Discussion

This study was specifically designed to examine or assess the probable influence of peers on student motivation and performance in the realm of Physical Education and Sports Sciences. After a comprehensive screening process and quality evaluation of retrieved studies, only nine studies could make it to the final sample of this research study. Eight out of nine included studies (Alstot, 2018; d’Arripe-Longueville et al., 2002; Keegan et al., 2010; Keegan et al., 2009; Kuo et al., 2017; Østergaard & Curth, 2014; Vazou, Ntoumanis, & Duda, 2006; Warburton, 2017) supported the view that peers influence positively student motivation, leading to improved academic learning and physical performance of physical education students. In contrast, only one study (Liu & Carless, 2006) was of the view that peers influenced negatively on student motivation, thus lowering their academic learning and physical performance. Taking these findings into account, there is ample evidence to suggest that peers might influence positively on student motivation, therefore, improving their academic learning and physical performance among physical education students.

Although the primary aim of the study was to only assess the exact influence that peers lay on their fellow students’ motivation. However, several other factors must be considered to state a clear picture of the findings. Peer feedback, out of all prominent factors, stood out as the most influencing factor of them all. It was suggested that positive peer feedback elevated motivation levels among their fellow peers which in turn improved their academic learning and physical performance. These findings are in line with previous studies that were conducted on students belonging to various other academic disciplines and sports clubs. For instance, a study

conducted on undergraduate students found that constructive peer feedback improved academic performance and critical thinking abilities (Gaynor, 2020). Similarly, another study discovered that participation in peer feedback activities improved students' understanding of course material and self-regulation in learning processes (Simonsmeier et al., 2020).

Furthermore, specific research conducted on the influence of peer feedback on the academic achievement of university students has also yielded significant results. It also demonstrated that peer feedback interventions have a positive effect on students' grades and academic achievement as a whole (Misiejuk, Wasson, & Egelandstad, 2021). Similarly, it was also observed that those student-athletes who were comprehensively receiving proper peer feedback resulted in improved physical performance and achievements. A study conducted to assess the impact of peer feedback on physical performance indicated an improvement in skill levels among the participants (Innes, Graham, & Bray, 2020). It was also observed that when these participants were regularly provided with peer feedback, they started performing consistently (Holt, Kinchin, & Clarke, 2012). Moreover, the social aspect of peer interactions was also observed to create a supportive environment, positively influencing individuals' commitment and adherence to physical activities (Butler & Hodge, 2001). Additionally, it was also observed that the effectiveness of this peer feedback relies on an environment where individuals feel comfortable sharing their thoughts without the fear of judgment. It should also be delivered in a very supportive, respectful and constructive way or otherwise positive feedback might also fail to achieve its intended purpose.

Conversely, it was identified that peers had a negative influence on their fellow peers only when they graded them during peer assessment (Liu & Carless, 2006). This may be because peers often see themselves as competitors and a competitor can never be a judge as their judgement may lead to potential biases in the result. Additionally, assessment through fellow peers might increase stress and anxiety levels among students, leading to reduced motivation and overall performance. These findings are in line with a past review conducted to assess the influence of peer assessment and grading on students. It suggested that only an anonymous form of peer assessment can have advantages on students' overall learning and performance (Panadero & Alqassab, 2019). Similarly, another study conducted to identify the probable factors, due to which students resist peer assessment also presented similar findings. The findings highlighted that most students feel that their peers are not qualified enough to grade their work (Kaufman & Schunn, 2011). Although the literature indicates the benefits of the role of peers in the life of their fellows, its implementation and efficacy are hampered by several obstacles. Potential issues have been identified as unequal participation, superficial feedback, and inadequate training in providing constructive feedback and assessment among peers (Mercader, Ion, & Díaz-Vicario, 2020). Additionally, it was also indicated that lack of clarity of guidelines and expectations for both givers and receivers were also among those factors (Tian & Zhou, 2020). Similarly, the nature of the task as well as the participants' prior experiences with peers also impacted the implementation process. A study conducted to assess the implementation of peer involvement stated that educational settings, workplace dynamics, and cultural considerations also contribute to shaping the success of positive peer influence (Er, Dimitriadis, & Gašević, 2021). Therefore, a comprehensive understanding of these multifaceted factors is essential for optimizing the implementation of peer feedback strategies across different environments.

4.1. Practical Implications

The findings of this review might contribute to the development of customized instructional strategies, and informed practices that leverage positive peer interactions, broaden the comprehension of peer influence across student groups and advocate for its incorporation in educational settings. They may further aid in promoting student engagement, collaboration, critical thinking, and self-regulated learning, thereby improving learning outcomes and physical achievements among students.

4.2. Identified Research Gaps

While existing literature has provided valuable insights, there are notable gaps that need to be addressed. The study is only focused on students belonging to physical education discipline. However, there are several examples of students enrolled in subjects other than physical education but still being part of a university sports team or club. Hence, further studies should be conducted on student-athletes enrolled in other subjects to assess the influence of peers in

other academic disciplines as well. Secondly, there was a high prevalence of qualitative studies, with only two studies (identified and included in the review) encompassing strong study designs. Therefore, future research should be conducted using strong study designs including longitudinal and randomized control trials to strengthen the evidence. Additionally, none of the included studies assessed gender as a main factor along with addressing the specific research question. Hence, future studies should utilize gender-based approach to add depth to the current evidence. Lastly, the studies included in the review focused on students from different schools, colleges and universities, without addressing the probable varying outcomes across these educational levels. Because there is a significant difference in the influence of peer assessment and peer feedback of a school-going student and a university student. Therefore, future research should examine the influence of peers within each educational context to provide a more concise understanding of these dynamics.

4.3. Recommendations

In light of the findings, drawn from this review, it can be recommended that peers should be allowed to participate actively in the lives of their fellow peers in the form of feedback and assessments to improve learning and performance outcomes.

5. Conclusion

To assess the exact influence of peers on student motivation and its association with academic learning and physical performance was the main aim of this review. Based on the findings drawn from the analysis, it can be suggested that peers influence positively on the motivation thus improving academic learning and physical performance of their fellow students in the realm of Physical Education and Sports Sciences. This review has also revealed numerous important research gaps, drawn from limitations, highlighted in the past research. Lastly, it also suggested several recommendations and implications for relevant educationists and policymakers, that were intended to improve the outcome of students enrolled in a challenging academic discipline like Physical Education and Sports Sciences.

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