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- *Kinesiology.
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- *Adapted physical education.
- * And all other related topics with sport sciences.
- * Health and Exercise Physiology.
- * Biomechanics.
- *Motor Behavior.
- *Sport management.
- * Recreation and Scouting.
- * Tests and measures.
- * Teaching methods.

Instructions

The researcher must commit to using a formal journal template without making any changes to it and to take into account that the scientific manuscript should consist of the following:

1. Manuscript title, name of the author (s), information of the author (s), and email of the corresponding author.

2. The abstract, a concise summary of the manuscript, plays a pivotal role in helping readers determine the study's relevance. It should include the study's objectives, methods, instrument, sample, significant results, and recommendations. Importantly, the abstract should not exceed [250] words and should not contain any documentation or statement of the statistical treatments used in the study.

3. Keywords: keywords should not be more than (3-5) words that express the areas covered by the study, and they must be placed at the bottom of the abstract.

4. The body of the manuscript should include the following elements:

- Introduction: it should include the following sections: the introduction, the problem, the purpose, significance, objectives and limitations of the study

Note: Previous studies should be included in the introduction and importance section.

- Methodology and Procedures: The submitted manuscript should contain the methodology details, the selected sample, the instrument, the procedures, and statistical analysis.

The findings: The results and discussion sections should be stated in one section, with the results presented first, followed by analysis and then the discussion.

Conclusions and recommendations.

The 'List of sources and references' is a critical component of the manuscript, as it validates the study's credibility and allows readers to explore related work. It should be comprehensive, including all sources referenced in the manuscript, and follow the APA style for citation.

5. Tables should be inserted in the body of the study and numbered sequentially according to their occurrence. Their titles should be written above them in Times New Roman font and bold font size (10).

6. The texts within the table should be in Times New Roman font and size (10) bold for column headers and (10) regular font for table text.

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8. The side and inner lines of tables, figures and drawings should be deleted.

9. All study parts should use Arabic numerals (1,2,3).

10. 1.5 lines space should be used.

11. The manuscript page should be inserted in the center of the bottom margin of each page.

12. The font type in the body of the manuscript should be Times New Roman font (10).

13. The title of the manuscript should be in Times New Roman font and size (12) in bold type.

14. The name(s) of the author(s) should be in Times New Roman font, and the font size is (10) in bold type.

15. The author's bio should be in Times New Roman, and the font size is (10) and in bold type.

16. Authors are requested to provide a separate title page with the title of the submitted manuscript, (co-)author names, affiliations and their full contact details, and full references to their work anonymously quoted in the manuscript.
17. Leave margins for the manuscript as follows: (1) inch from the top and bottom, (1.5) inches for the right and left sides.
18. The journal follows the rigorous APA style for citing references, ensuring a thorough and comprehensive review process. This commitment to quality and accuracy should give authors confidence in the publication process.
19. Authors shall attach a copy of the research instruments used in the study if not included in the appendices.
20. The number of pages should not exceed (20) pages.

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Social Interaction Patterns among Students of Physical Education and Sport Sciences at the Hashemite University

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Abstract:

There are multiple prevailing patterns of social interaction practiced by university students in their daily lives or with classmates, whether these patterns are cooperative, competitive, or otherwise. This study aimed to identify the prevailing patterns of social interaction among students of the Faculty of Physical Education and Sports Sciences at Hashemite University. The sample consisted of (357) male and female students, selected through stratified random sampling from a study population of (1080), representing 33% of the total population. The descriptive analytical method was employed in the investigation. The results indicated that the most common patterns of social interaction were as follows: competition between students, cooperation, and finally conflict, all of which were of medium degree. The results also showed that there were no statistically significant differences in these patterns due to the gender variable, while there were statistically significant differences at the significance level of ($\alpha = 0.05$) according to the specialization variable, in favor of sports rehabilitation over all social interaction patterns. In conclusion, based on the results of this study, which confirm that the prevailing patterns of social interaction were of a medium degree, the researchers recommend building educational programs to train students on positive interaction patterns. Additionally, it is recommended to conduct surveys on students from both public and private universities to assess their social interaction patterns.

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Key Words: Social Interaction, Prevailing Patterns, Students, Physical Education

Introduction:

Insofar as he satisfies his many requirements, whether psychological, social, or physiological, with the members of the group to which he belongs and is compatible, a person is called a social creature who cannot leave his family and has a sense of belonging to it. As a result, he must engage with it in accordance with the social roles he plays, which vary depending on the circumstances to which he is exposed. This could occur within the home (within the family) or outside the home (in society).

A person spends the majority of his or her everyday life interacting with other people or groups. He or she may do this voluntarily, as in the case of family groups, classes, or professions, or he or she may do it purposefully. In any case, he or she is a part of one of the social networks that are formed between people who regularly interact in person, either continuously or intermittently (Al-Waqfi, 2003).

As a result, every social phenomenon is the result of the interaction of individuals or groups, in the sense that when society is in the form of a group of people in continuous interaction with each other, interaction is one of the basic and important concepts in society. The reality of social life is nothing more than the way in which individuals and groups interact. Among the forms that interaction takes are competition, conflict, adaptation, and representation. These models are not separate from each other but rather overlap in one way or another (Abu Ayyash, 2005).

Social interaction is one of the most crucial aspects of social connections and, as (Rizqallah, 2008) has shown, is a fundamental and strategic notion in social psychology. It also involves a set of expectations on the part of all its players. When a child cries, he anticipates that his family will respond, especially his mother. It also entails being conscious of one's social function and behavior in relation to societal norms. Social interaction is a two-way process between two or more people whose actions are mutually dependent on one another. It leads to a process of friction and interaction; the interaction is regarded as positive if love, sympathy, and acceptance spread among the involved parties, and as negative if self-love and selfishness are present (Al-Khatib et al., 2006). In other words, it's a situation where two or more people are involved, and every person's actions have an impact on those of everyone else (Al-Khatib, 2013).

Social interaction involves the effective response that results in learning, which is represented in the change that occurs to the individual because of the response that he makes. The process by which a child observes and responds to others and forms general and common behavioral patterns among members of society also results in the formation of attitudes. A person's general attitude toward himself and others contributes to the development of his personality and attitudes (Al-Rashdan, 2000).

Various situations involve the interaction between people based on their social roles and positions in society, and those positions may include a variety of social roles related to them. By associating roles with social positions, individuals can regulate their mutual relationships and their expectations of each other (Shroukh, 2004). Additionally, there are several characteristics of social interaction, including the fact that it is considered the main method of communication between individuals within the same society and between societies. Excellent performance and a fulfilling life are also characteristics (Hamshari, 2008).

Social interaction involves a number of stages, such as recognition, which is achieving a common object for the dynamic situation; evaluation, which is defining a common system upon the basis of which different solutions are judged; control, which is attempts by individuals to influence one another; decision-making, which is having access to final decisions; tension control, which is addressing issues that arise in the group; and integration, which is integrating oneself into the larger group. Cooperation between members of the group in an atmosphere dominated by order and discipline seeks to educate students according to the standards and values of society and to develop their personal and social capabilities (Nasri, 2010).

Statement of problem :

One of the biggest humanitarian issues affecting students today is the lack and weakness of social interaction. Students who struggle to build relationships with others may become isolated and develop various diseases, particularly mental illnesses that may endanger their lives. According to Fromm (2009), people who don't engage with others can't act appropriately, may mislead others and themselves, and lack a sense of self, which causes them considerable anxiety. Abdul-Baqi (2010) stated that a lack of social interaction is one of the main issues that many students confront since it prevents them from establishing friendships and forming bonds. As a result, they experience weak social connections, symbolized by a loss of values, a sense of helplessness, and social isolation, according to Mansour et al (2006). Additionally, this results in the isolated student feeling dissatisfied, leading to the absence of proper university life and traditions in interpersonal relationships, excluding interactions with people (Al-Rikabi,

2018). Consequently, the development of reciprocal relationships between students in terms of cooperation and help in the pursuit of knowledge depends on the individual's need for social interaction and the construction of social interactions in the university environment.

Significance of the Study :

1. This research, as far as the researchers know, is one of the few studies linking prevailing patterns among Physical Education and Sports Sciences students.
2. This research can add a theoretical aspect to the sports library.

Objective of the Study: The objective of the study is to respond to the following two questions:

1. What are the prevailing patterns of social interaction among students of the Faculty of Physical Education and Sports Sciences at Hashemite University?
2. Are there statistically significant differences at the level of significance ($\alpha = 0.05$) in the prevailing patterns of social interaction among students due to the variables (gender, specialization)?

Limitations of the Study :

- **Objective limitations:** The degree of social interaction among students of the Faculty of Physical Education and Sports Sciences at Hashemite University.
- **Human limitations:** Students of the Faculty of Physical Education and Sports Sciences at Hashemite University.
- **Time limitations:** The second semester of the academic year 2023/2024.
- **Spatial boundaries:** Hashemite University in Zarqa.

The determinants of the study were represented in the degree of the study tool's validity, its reliability, the objectivity of its sample replies, and the degree of the study sample's representation of its community.

Methods and Materials :

Because it is most relevant to the phenomena, the study relied on the descriptive correlative approach, which seeks to describe the phenomenon as it is before analyzing and interpreting it.

The population of the study comprised all students in the Faculty of Physical Education and Sports Sciences at Hashemite University (N = 1080). A random sample of 759 male and female students, representing 36% of the study population, was selected. Initially, 450 questionnaires were distributed, and 357 of those were collected, representing 33% of the population. Table 1 shows the distribution of the sample members according to the study variables.

Table 1. The Distribution of the Sample Members According to the Study Variables

N0	Variable	Category	Number	Percentage
1	Gender	Male	158	44.3
		Female	199	55.7
		Total	357	100
2	Specialization	Coaching and Sport Management	265	74.2
		Sport Rehabilitation	92	25.8
		Total	357	100.0

Tool of the Study :

The researchers developed a study tool to measure social interaction patterns and achieve the objective of the study, utilizing the studies of Al-Obaidi (2012) and Mons (2015). The tool has 31 items in total, divided into three categories. According to a five-point Likert scale, the items were distributed as follows: strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The following gradation was used to assess the item averages: 1-2.33 (low), 2.34-3.67 (medium), and 3.68-5 (high).

Validity of the Tool:

The tool was distributed to experts (N=15) from faculty members with expertise in Physical Education and Educational Sciences at Hashemite University, Zarqa University, and the University of Jordan. They assessed the accuracy of each statement, its relevance to its area, and its suitability to accomplish the objectives of the research, along with its relevance, conciseness, linguistic integrity, and lack of repetition. A few linguistic and typographical changes were made in response to the experts' suggestions.

Reliability of the Tool:

To ensure reliability, the internal consistency correlation coefficient of the items on the two scales was calculated by finding Cronbach's alpha, as shown in Table 2

Table 2. Internal Consistency Reliability Coefficients for the Questionnaire, (Cronbach's Alpha)

Field	Reliability coefficient (Cronbach's alpha)
Competition between Students	0.93
Cooperation	0.88
Conflict	0.78
Patterns of Social Interaction as a Whole	0.86

Table 2 clearly shows the reliability coefficient for the questionnaire on social interaction patterns was 0.86, indicating that the tool has an appropriate reliability coefficient and is reliable for achieving the objectives of the study.

Statistical Methods:

To process the data, the Statistical Packages for Social Sciences (SPSS) program was used, and the following statistical treatments were calculated:

1. Identifying the characteristics of the study sample by finding frequencies.
2. Cronbach's alpha coefficient for calculating the reliability of the study tool.
3. Calculating the means and standard deviations, performing One-Way ANOVA, and conducting the t-test for the responses of the study sample.

Results and Discussion:

4. What are the prevailing patterns of social interaction among students of the Faculty of Physical Education and Sports Sciences at Hashemite University?
5. To answer this question, means and standard deviations were extracted to determine the order of the patterns of social interaction according to the responses of the study sample from the students' perspectives. Table 3 shows this.

Table 3. Social Interaction Patterns in Descending Order

No	Rank	Field	Mean	SD	items	Degree
1	1	Competition between Students	3.62	0.66	11	Medium
2	2	Cooperation	3.60	0.70	10	Medium
3	3	Conflict	3.33	0.65	10	Medium
		Patterns of social Interaction as a Whole	3.51	0.66	31	Medium

The results presented in the previous table indicate that the order of the prevalent patterns of social interaction is as follows: competition, followed by cooperation, and finally conflict.

The researchers believe that the prevailing patterns of social interaction among students of the Faculty of Physical Education and Sports Sciences at the Hashemite University are of medium level (M = 3.58, SD = 0.67). These values fall within the middle category of estimates for patterns of social interaction, which range between (2.34 and 3.67). From the researchers' point of view, this result is considered unsatisfactory. The findings of this study are like those of Al-Ghanbousi (2009) and Mutlaq (2008). The researchers explain the similarity of the results in these studies with the current study by noting that they diagnose the negative aspects of the cultural environment and its

repercussions on the nature of social relations prevailing in Arab societies. Furthermore, it restricts children's freedom, which fosters a kind of dependence on others and an inability to take initiatives. This negative culture is reflected in society's institutions in general and in its educational institutions in particular, as this type of relationship is transmitted to the classroom, influencing students' relationships with each other and with faculty members. This dependency and conditional acceptance lead to multiple negatives, such as a lack of initiative and a fear of participation and expressing opinions.

The researchers extracted the means and standard deviations for each pattern and for the overall pattern according to the responses of the study sample from the Faculty of Physical Education and Sports Sciences at Hashemite University. They were arranged in descending order according to their means.

Pattern of Competition among Students

Table 4. Means and Standard Deviations of the Pattern: Competition among Students.

Rank	No	Items	M	SD	Degree
1	4	I go above and beyond to help my coworkers succeed without hurting them.	3.69	0.91	High
2	2	I gather information from a variety of sources to outperform my peers.	3.68	0.86	High
3	8	I rely on my skills and effort to accomplish my goals before others.	3.68	0.88	High
4	10	I love serious competition	3.65	0.89	Medium
5	3	I love competing my college peers.	3.63	0.90	Medium
6	5	I like to outperform my colleagues without hurting them	3.62	0.87	Medium
7	11	I like to compete in groups of students	3.61	0.92	Medium
8	6	I love the atmosphere of competition and challenge to achieve goals	3.59	0.88	Medium
9	1	I pursue my goals without neglecting the interests of my college peers	3.58	0.88	Medium
10	9	My goal is to win when I compete with my peers	3.57	0.88	Medium
11	7	I excel in my studies by competing with my peers	3.56	0.88	Medium
Total			3.62	0.66	Medium

Table 4, related to the pattern of competition among students, shows that the total mean of the study sample responses was at a medium level. This indicates that the pattern of competition between students is the most prevalent. The researchers believe it is natural for the principle of competition to prevail among students because one of the most important characteristics of this stage is that students try to make every effort to reach the goals, they have set for themselves. This stage is also characterized by honest competition through the various activities held by the college, whether sports, cultural, or social. We see students doing their utmost to win and excel in the various fields available in the college, especially with the presence of multiple and varied opportunities for competition and excellence. Students tend to show their abilities and inclinations through participation and competition with their colleagues inside and outside the college, especially in academic achievement, which qualifies them to occupy respectable positions and jobs after graduating from the college (Al-Rimawi, 2003). This study aligns with the results achieved by Tanner (2002) regarding camping experiences and participation in various activities, showing that honest competition during these activities positively affects self-esteem, decision-making, and self-reliance.

The researchers also believe that several reasons have led to the moderate level of social interaction in the pattern of competition between students. The most important reason is the diversity and discrepancy between the cultures of students enrolled in the college, depending on the region to which the student belongs. This may lead to varying levels of competition between students. The researchers attribute this to the fact that students of the Faculty of Physical Education and Sports Sciences at Hashemite University are distinguished from a social point of view by their love for their colleagues and their efforts to avoid offending them.

Pattern of Cooperation:**Table 5. Means and Standard Deviations of the Responses of the Study Sample to the Items of the Pattern: Cooperation**

Rank	No	Items	M	SD	Degree
1	20	I support my help to low achieving peers	3.79	0.84	High
2	21	Working in groups helps me achieve my goals	3.71	0.85	High
3	14	I participate in my peer's activities and exchange things with them.	3.68	0.85	Medium
4	17	I engage in classroom discussion with my peers' concerning subjects.	3.63	0.85	Medium
5	15	I collaborate with my peers in groups to make more friends, and I assist those of special needs.	3.59	0.89	Medium
6	12	I enjoy working in teams because it allows me to expand my knowledge.	3.57	0.92	Medium
7	19	I concur with my colleagues' opinions without reservation.	3.56	0.93	Medium
8	16	I agree with my colleagues in their unanimous opinion.	3.53	0.89	Medium
9	18	I do not hesitate to help any student in the college	3.52	0.91	Medium
10	13	I help my colleagues achieve their goals.	3.45	1.04	Medium
Total			3.60	0.70	Medium

The data shown in Table 5 indicate that the averages of the study sample's responses to the paragraphs reflect a moderate degree. These results suggest that the level of cooperation among students was moderate, ranking second among various patterns of social interaction ($M = 3.60$, $SD = 0.70$). Cooperation arises when individuals perceive a shared interest and assume mutual responsibility and self-control to achieve their common goals through concerted action. They acknowledge the importance of shared goals and organizational structure as crucial elements for achieving consensus. Researchers attribute this secondary ranking to the university's adoption of modern educational principles emphasizing cooperation, tolerance, and collaborative work. This fosters a conducive educational environment that promotes students' holistic development. Consequently, students naturally experience and value cooperation with peers, which enhances their academic achievements, shapes their personalities, and fulfills diverse needs as they strive towards common goals together.

Pattern of Conflict:**Table 6. Means and Standard Deviations of the Responses of the Study Sample to the Items of the Pattern: Conflict**

Rank	No	Items	M	SD	Degree
1	22	If my colleagues disagree with another group, I will not hesitate to support them.	3.77	0.88	High
2	25	Even if I anger my colleagues, I flatter my teachers and work to prevent them from attaining their objectives.	3.75	0.79	High
3	30	If anyone interferes with my interests, I won't hesitate to hurt them.	3.67	0.87	Medium
4	28	my objectives justify the means	3.66	0.85	Medium
5	27	I do not hesitate to offend those who disagree with me	3.66	0.85	Medium
6	23	I do not hesitate to get into physical fights with others	3.66	0.86	Medium
7	26	I don't care what my colleagues think of me	3.66	0.87	Medium
8	31	I seek to achieve my interests even at the expense of my colleagues	3.65	0.85	Medium
9	24	I do not hesitate to threaten my colleagues if they oppose me	3.62	0.86	Medium
10	29	I do not hesitate to offend those who disagree with me	3.58	0.85	Medium
Total Mean for the pattern as a whole			3.33	0.65	Medium

The data in Table 6, related to the conflict patterns among students, indicate that the medians of the study sample's responses to these items ranged from 3.58 to 3.77, suggesting a moderate degree of conflict. The study found that this pattern ranked third among the various interaction patterns examined, indicating that conflict is relatively less prevalent among students at the Hashemite University, particularly within the Faculty of Physical Education and

Sports Sciences. Students at the university pursue diverse goals such as success, excellence, achieving high grades, and gaining peer recognition, often leading to occasional conflicts. In cases where intense competition leads to harm or the exclusion of others for personal gain, conflict can become a defining feature of interpersonal dynamics. This may result in internal strife within groups or conflicts between different groups, particularly in competitive scenarios where one group succeeds at the expense of another (Kazem, 2013).

These findings align with Tanner (2002), who similarly identified conflict as one of the less common social processes among students. A democratic approach to conflict resolution encourages collaboration among students to achieve shared objectives, underscoring the importance of universities promoting such practices for societal benefit. This is supported by Glever (2001), who highlighted the positive impact of democratic and decentralized environments on fostering healthy social interactions among students. Moreover, conflicts, when approached constructively, can facilitate deep learning through robust discussions on contentious topics. However, negative outcomes of student conflicts include escalation and diversion from academic and excellence-oriented goals towards less productive pursuits (Glever, 2001).

Regarding the second question : **Are there statistically significant differences ($\alpha = 0.05$) in average responses among the study sample based on variables such as sex and specialization ?**

To address this, standard deviations, one-way analysis of variance (ANOVA), and t-tests were conducted on responses regarding prevailing social interaction patterns among students at the Faculty of Physical Education, Hashemite University. Results for each variable are presented below.

Variable of Gender:

The means and standard deviations were calculated according to the gender variable, as shown in Table (7).

Table 7. Means and "T" test for the Responses of the Study Sample to the Patterns of Social Interaction According to the Gender Variable

Pattern	Gender	N	M	SD	T-value	DF	Sig
Competition among Students	Male	158	3.67	0.70	10261	1	0.20
	female	199	3.58	0.62			
Cooperation	Male	158	3.67	0.71	10670	1	0.09
	female	199	3.55	0.69			
Conflict	Male	158	3.38	0.66	10190	1	0.23
	female	199	3.30	0.63			
All the Patterns	Male	158	3.69	0.69	10551	1	0.12
	female	199	3.58	0.64			

According to the results of the t-test analysis presented in Table 7, there were no statistically significant differences between the study sample's responses to various patterns of social interaction based on gender. The study found no significant gender differences in the competitiveness among students, suggesting that competition is widespread in universities, with both males and females striving equally for academic achievements and participation in extracurricular activities. This finding aligns with Al-Ghanbousi (2009), who also observed that gender does not influence the nature of student competitiveness.

Regarding patterns of cooperation among students, the findings indicated no statistically significant differences between males and females. This result is attributed to the college environment and shared resources that facilitate collaboration and camaraderie, especially practical resources. It is consistent with Tanner (2002), who found no gender-based influence on cooperation patterns, but differs from Saad Allah (2009), who reported significant gender differences favoring males in cooperation patterns.

In terms of conflict patterns, the study's results similarly showed no gender-related variations. This may be due to students' natural drive to pursue individual goals, requiring them to exert considerable effort and resilience in their pursuits. This outcome supports Tanner (2002) but contrasts with Saad Allah (2009)'s findings.

Variable of Specialization:

The means and standard deviations were calculated for the responses of the study sample comprising students from the Faculty of Physical Education and Sports Sciences at the Hashemite University. The t-test was used to ascertain differences between the average responses of the study sample regarding various areas of social interaction patterns based on the specialization variable, as presented in Table 8 below.

Table 8. Means and "T" test for the Responses of the Study Sample to the Patterns of Social Interaction According to the Specialization Variable

Pattern	Gender	N	M	SD	T-value	DF	Sig.
Competition among Students	Coaching and Sport Management	265	3.57	0.66	20423-	1	0.01*
	Sport Rehabilitation	92	3.76	0.63			
Cooperation	Coaching and Sport Management	265	3.54	0.71	20858-	1	0.00*
	Sport Rehabilitation	92	3.78	0.65			
Conflict	Coaching and Sport Management	265	3.27	0.66	20968-	1	0.00*
	Sport Rehabilitation	92	3.50	0.56			
All the patterns	Coaching and Sport Management	265	3.57	0.67	20884-	1	0.00*
	Athletic rehabilitation	92	3.80	0.60			

According to Table 8, statistically significant differences were found between the responses of the study sample regarding social interaction patterns among students at the Faculty of Physical Education and Sports Sciences, at a significance level of $\alpha = 0.05$, based on specialization in each pattern and overall. These differences favor the specialization of Athletic Rehabilitation. Researchers attribute this to the smaller student population in Sports Rehabilitation compared to Sports Management and Training. This facilitates placing students in smaller groups that influence various interaction patterns, aided by the project-based and problem-solving nature of Sports Rehabilitation education.

This finding aligns with Tanner (2002), emphasizing the relationship between cooperation and academic achievement. The nature of study materials in Sports Rehabilitation demands effort and perseverance, fostering competitive tendencies, particularly in scientific subjects. This consistency is echoed in Saad Allah (2009), attributing social interaction differences to study materials, student characteristics, and specialization type.

Regarding conflict patterns, the study also identified specialization-based differences favoring Sports Rehabilitation, likely due to its competitive academic environment. This contrasts with Glever (2001), who found no specialization-related differences.

Conclusion :

Based on these findings indicating a moderate degree of prevailing social interaction patterns, researchers recommend developing educational programs to promote positive interaction patterns. Additionally, conducting surveys among students from both public and private universities could help organize their social interactions.

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أنماط التفاعل الاجتماعي لدى طلبة التربية البدنية وعلوم الرياضة في الجامعة الهاشمية

الملخص :

هناك أنماط متعددة سائدة من التفاعل الاجتماعي يمارسها طلاب الجامعات في حياتهم اليومية أو مع زملائهم في الفصل، سواء كانت هذه الأنماط تعاونية أو تنافسية أو غير ذلك. هدفت هذه الدراسة إلى التعرف على أنماط التفاعل الاجتماعي السائدة لدى طلبة كلية التربية البدنية وعلوم الرياضة في الجامعة الهاشمية. تألفت العينة من (357) طالبا وطالبة تم اختيارهم من خلال عينة عشوائية طبقية من مجتمع الدراسة البالغ (1080)، وهو ما يمثل 33% من إجمالي الطلبة. تم استخدام المنهج التحليلي الوصفي. وقد أشارت النتائج إلى أن أكثر أنماط التفاعل الاجتماعي شيوعا كانت على النحو التالي: التنافس بين الطلاب، والتعاون، وأخيرا الصراع، وكلها كانت من الدرجة المتوسطة. كما أظهرت النتائج عدم وجود فروق ذات دلالة إحصائية في هذه الأنماط تعزى لمتغير النوع الاجتماعي، في حين توجد فروق ذات دلالة إحصائية عند مستوى الدلالة ($\alpha = 0.05$) تبعا لمتغير التخصص، لصالح التأهيل الرياضي على جميع أنماط التفاعل الاجتماعي. وفي الختام وبناء على نتائج هذه الدراسة التي تؤكد أن الأنماط السائدة للتفاعل الاجتماعي كانت بدرجة متوسطة، يوصي الباحثون ببناء برامج تعليمية لتدريب الطلاب على أنماط التفاعل الإيجابي. بالإضافة إلى ذلك يوصى بإجراء استطلاعات على الطلاب من كل من الجامعات الحكومية والخاصة لتقييم أنماط تفاعلهم الاجتماعي.

الكلمات المفتاحية: التفاعل الاجتماعي، الأنماط السائدة، الطلاب، التربية البدنية.

The Degree of Practicing Strategic Intelligence among Swimming Coaches in Jordan

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Abstract:

The study aimed to investigate the extent of strategic intelligence practices among swimming coaches in Jordan and explore potential differences based on gender. The study randomly selected a sample of (45) swimming coaches, comprising (32) males and (13) females. The researchers employed a descriptive approach, deemed suitable for the study's nature and objectives. To collect data, a questionnaire was designed with two parts: the first gathering demographic information from swimming coaches, and the second comprising (35) items focused on elements of strategic intelligence (Prospective, Future Vision, Partnership, Motivation, and Organized Thinking). The researchers ensured reliability and validity coefficients. The results indicated that swimming coaches generally exhibited an average degree of strategic intelligence practice. Furthermore, the study found no statistically significant differences in strategic intelligence practice between male and female coaches. Consequently, the researchers recommended conducting courses and workshops tailored for swimming coaches, aimed at enhancing their strategic intelligence.

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Key Words: Strategic Intelligence, Coaches, Jordan, Swimming.

Introduction:

The rapid changes and transformations witnessed in recent years across various societal sectors (economic, scientific, technological, social, cultural, and sports) have introduced numerous challenges to the processes of planning and future prediction. Researchers and scholars in organizational and strategic management have therefore sought means and methods to adapt and cope with these evolving variables, aligning them with internal and external environments (Oliver & Johan, 2005).

Tuwaiqat (2007) asserted that different sectors require leaders capable of envisioning the future strategically, developing future visions through creativity and excellence, and enhancing the knowledge, experiences, and skills of society members. This includes improving the efficiency of trainers and educators in scientific education to positively guide them toward increased productivity, efficiency, and goal achievement.

Thus, the significance of strategic intelligence in leadership emerges as a crucial administrative tool for navigating the future and anticipating changes that impact organizational success (Xu, 2007). Successful leadership intelligence is fundamental to directing institutions towards achieving strategic goals and ensuring continuity and survival.

Mckenna and Rooney (2005) highlight qualities of successful leaders characterized by wisdom and strategic intelligence—cooperation, productivity, cautious action, long-term goal orientation, effective interpersonal skills, trust-building, experience evaluation, and openness to new ideas. Al-Nuaimi (2008) argues that leadership intelligence transcends mere intellect; it demands the strategic application of mental abilities to uncover future opportunities that set leaders and their organizations apart, making them difficult for others to emulate.

According to Bierly et al. (2000), strategic intelligence involves "the ability to anticipate, interpret broadly, and make informed decisions based on evaluating current information and selecting appropriate future goals." Gonzales and Zaina (2008) contend that strategic intelligence provides comprehensive analytical insights for senior management, essential for the efficiency and effectiveness required by future organizations. Lehance (2011) underscores the pivotal role of strategic intelligence across organizational departments and management areas, particularly in future-oriented decisions.

Researchers emphasize that the sports sector, particularly in coaching, such as swimming coaches, has been significantly impacted by societal changes, necessitating strategic engagement with players, clubs, and society at large to thrive at local, regional, and international levels.

Strategic intelligence in sports encompasses the cognitive abilities of coaches to analyze, plan, develop programs, solve problems, draw conclusions, and act swiftly in emergencies. It also includes their capacity to synthesize and coordinate ideas, accelerate learning, empathize, display emotions, and understand others.

The challenges confronting trainers today underscore the imperative of enhancing their efficiency and achieving desired goals. This requires identifying factors that enhance the productivity and effectiveness of coaches who employ strategic intelligence skills, influencing player behavior and optimizing interaction with training programs to achieve high efficiency and goal attainment.

Statement of Problem:

Strategic intelligence is a practical tool for gathering data that equips coaches across different clubs with the knowledge needed to make informed decisions. It involves studying the environment, understanding its requirements and needs, and analyzing available information. This process supports accurate prediction and effective planning for the training process.

Strategic intelligence forms the cornerstone of a successful coach's work, serving as an essential element that enables leaders to make sound and logical decisions shaping the team's future. Strategic intelligence empowers coaches to foresee the team's trajectory, engage in organized thinking, develop future visions, motivate players, and make timely decisions to ensure high-efficiency training program execution. This, in turn, enhances the team's prospects for achieving better results. Therefore, the study focuses on assessing the extent to which swimming coaches practice strategic intelligence.

Significance of Study:

1. This research, to the best of the researcher's knowledge, is one of the few studies linking strategic intelligence to swimming coaches.
2. This research can contribute a theoretical aspect to the sports literature.
3. Generalizing the results of this research can encourage swimming coaches to incorporate strategic intelligence into their training programs.

The current study aims to answer the following questions:

1. What is the extent of strategic intelligence practiced by swimming coaches in Jordan?
2. Are there statistically significant differences, at the significance level ($\alpha \leq 0.050$), in the average practice of strategic intelligence among swimming coaches based on gender?

Method and procedures:

Methodology: The researchers employed a descriptive approach due to its suitability for the nature and objectives of the study.

Participants: Forty-five swimming coaches (32 male and 13 female) were randomly selected from those working in swimming training across clubs, private schools, and academies during the period from January 15, 2024, to February 25, 2024, as shown in Table 1.

Table 1. Distribution of Participants

Participant	Variable	Number	%
Gender	Male	32	71 %
	Female	13	29 %
Total		45	100 %

Study Tool: The researchers utilized a questionnaire to assess the extent of strategic intelligence practiced by swimming coaches, consisting of 35 items. The researchers developed the questionnaire's paragraphs to align with the study's nature and objectives, encompassing five subscales that represent components of strategic intelligence: Prospective (7 paragraphs), Organized Thinking (7 paragraphs), Future Vision (6 paragraphs), Motivation (9 paragraphs), and Partnership (6 paragraphs).

Validity of the Questionnaire: The researchers presented the questionnaire to a panel of experts to validate its content. Adjustments were made based on their recommendations to enhance the questionnaire's validity. Following expert validation, the final version included (35) items distributed across the five domains of strategic intelligence. The responses from the study participants were rated on a five-point scale: strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1).

Reliability of the Questionnaire: To assess the reliability of the questionnaire, the researchers evaluated its internal reliability using Cronbach's alpha coefficient, as Table 2. Shows the results.

Table 2. Cronbach Alpha Internal reliability Coefficients.

Strategic Intelligence	No	Cronbach Alpha
Prospective	7	0.75
Organized thinking	7	0.76
Partnership	6	0.80
Future Vision	6	0.81
Motivation	9	0.79
Strategic Intelligence	35	0.91

As indicated in Table 2, the statistical values for both domains and the questionnaire are sufficiently high and acceptable for the study's purposes, affirming the questionnaire's reliability.

Procedures for Correcting the Study Questionnaire:

The degree of strategic intelligence was categorized into three levels (high, medium, low) based on arithmetic means as follows:

The questionnaire offered a range from 1 (minimum) to 5 (maximum). By subtracting the minimum from the maximum, we get 4. Dividing this difference by three levels results in the following equation: $4 \div 3$ levels (High, Medium, Low) = 1.33 Thus, the thresholds are determined as: Low: 2.33 or less. Medium: 2.34 - 3.66. High: 3.67 and above.

Statistical Analysis:

The study employed arithmetic means and standard deviation, along with the T-test.

Results and Discussions:

Results pertaining to the first question: What is the extent of strategic intelligence practiced by swimming coaches?

Table 3. Means and Standard Deviations of the level to Which Swimming Coaches Practice Strategic Intelligence

Variable	Mean	Standard Deviation	Strategic Intelligence level	Rank
Organized thinking	3.66	0.65	Medium	1
Motivation	3.53	0.64	Medium	2
Prospective	3.57	0.61	Medium	3
Future Vision	3.24	0.87	Medium	4
Partnership	2.20	1.01	Low	5
Strategic Intelligence	3.26	0.58	Medium	

The results related to the first question showed that the degree of strategic intelligence practiced by swimming coaches was medium, with an arithmetic average of 3.26 and a standard deviation of 0.58. This can be attributed to the fact that the appointment of swimming coaches is often determined by club management decisions, resulting in frequent replacements. This reduces the opportunity for coaches to gain sufficient experience in practicing strategic intelligence within their teams. This may explain why most dimensions of strategic intelligence were found to be mediocre, except for the partnership dimension, which was low. The result of this study differs from Al-Azzawi's (2008) study, which showed that the level of strategic intelligence among decision-makers was low.

The arithmetic means and standard deviations of the paragraphs of each dimension of strategic intelligence were also calculated as follows.

First: Prospective

Table 4. Means and Standard Deviations to the level of Practice of Swimming Coaches' Strategic Intelligence for Prospective Items

No	Items	Mean	Standard Deviation	Strategic Intelligence level
1	The coach relies on his personal experiences to analyze the future directions of the team.	4.27	1.02	High
2	The coach is satisfied with theoretical indicators in building his attitude towards events related to the team.	3.96	1.11	High
3	The coach makes suggestions that will avoid problems in the team.	3.47	0.92	Medium
4	The coach follows the changes in the surrounding environment and their implications for the future of the team.	3.37	0.92	Medium
5	The coach anticipates future complications.	3.30	1.02	Medium
6	The coach could see and deal with the invisible.	3.26	1.12	Medium
7	The coach is constantly sensing strategic issues that have an impact on the future of the team.	2.87	1.32	Medium
Total		3.57	0.61	Medium

Regarding the prospective dimension, it was rated as medium. This can be attributed to the coach's experiences to analyze the future directions of the team, as well as the coach ability to build his attitude towards events related to the team.

Second: Organized thinking

Table 5. Means and Standard Deviations of the level of Strategic Intelligence for Organized Thinking Items

No	Items	Mean	Standard Deviation	Strategic Intelligence level
1	The coach organizes and schedules the information before presenting it to the players.	3.75	0.79	High
2	The coach relies on multiple sources to obtain information used to build a perception of events taking place within the team.	3.73	0.84	High
3	The coach closely follows up on the collection of detailed data on the players' problems.	3.63	0.82	Medium
4	The coach conducts a careful and thorough study of all aspects related to the team.	3.62	0.77	Medium
5	The coach relies on a clear methodology in classifying information, which facilitates its assimilation and handling.	3.61	0.83	Medium
6	The coach studies the new ideas together instead of studying them individually.	3.55	0.84	Medium
7	The coach envisions the team in a coherent and harmonious system of parts.	3.38	0.98	Medium
Total		3.66	0.65	Medium

The results also indicated that the arithmetic mean of the dimension of organized thinking came in first place with a mean of (3.66) and a standard deviation of (0.65). The results indicated that the statement "the swimming coach organizes information and schedules it before presenting it to the team" received the highest arithmetic means. The researchers attribute this to the fact that the ability to organize and tabulate information is a skill that can be acquired through specialized courses, as noted by Abdali (2010) and Maccoby et al. (2004).

The researchers attribute this result to the fact that organized thinking may be the most applicable area, requiring special abilities that are likely present in most trainers and can be acquired and developed, as indicated by Abdali (2010). Reigel (2008) and Xu (2007) also mentioned that strategic intelligence involves organizing data by collecting, interpreting, and converting it into useful information to make the right decisions. Additionally, Haines (2007), and Tubke et al (2003) pointed out that strategic intelligence is the ability to think systematically and reasonably to reach goals. This explains why organized thinking ranks highest among the dimensions of strategic intelligence.

Third: Partnership

Table 6. Means and Standard Deviations of the Degree of Strategic Intelligence for Partnership Items

No	Items	Mean	Standard Deviation	Strategic Intelligence level
1	The coach seeks to continue the strategic partnership with other teams.	2.45	1.02	Medium
2	The coach believes that partnering with coaches is a good solution to get out of the crises he faces.	2.31	1.05	Low
3	The coach encourages the exchange of experiences with other clubs.	2.21	1.05	Low
4	The coach is informed about the experiences in other clubs to benefit from them as much as possible.	2.14	1.17	Low
5	The coach seeks to establish partnerships with clubs to benefit from the material and intellectual resources in them.	2.12	1.12	Low
6	The coach consults experts and specialists to solve issues and make decisions in the team.	2.08	1.11	Low
Total		2.20	1.01	Low

The results related to the partnership dimension indicated that this dimension was rated low. The researchers attribute this to the policies and laws followed in the clubs, which may limit the possibility of

partnerships in general and restrict the coach's ability to practice them. the researchers suggest that the partnership dimension ranked lowest due to club policies that may limit coaches' powers in establishing partnerships with other clubs to gain support and reach common goals.

Fourth: Future vision

Table 7. Means and Standard Deviations of the level of Strategic Intelligence for Future Vision Items

No	Items	Mean	Standard Deviation	Strategic Intelligence level
1	The coach derives his vision for the future of the team through the vision of the Union.	3.95	1.05	High
2	The coach tends to use new ways in achieving the team's future vision.	3.45	0.91	Medium
3	The trainer could turn a vision into a practical reality.	2.29	1.08	Low
4	The coach tries to build a comprehensive perception of the facts and events in the team.	3.33	1.15	Medium
5	The coach has a vision of holistic dimensions through which he determines the way the team works.	2.88	1.14	Medium
6	The future coach settles down to develop team strategies.	2.92	1.12	Medium
	Total	3.24	0.87	Medium

The results related to the future vision dimension indicated that it was rated medium. The researchers attribute this to the need for possibilities, experiences, and a rational study of the team's current reality and future. Additionally, future vision involves understanding, perception, and analysis, as mentioned by Al-Ghalbi and Idris (2007). The researchers believe that these abilities and qualities may be medium, innate characteristics that many coaches might not possess.

Fifth: Motivation

Table 8. Means and standard deviations of the degree of strategic intelligence for motivation Items

No	Items	Mean	Standard Deviation	Strategic Intelligence level
1	The coach communicates with the team members constantly.	3.91	0.88	High
2	The coach could convince players to carry out the tasks required of them efficiently.	3.80	0.87	High
3	The coach could motivate the players.	3.72	0.85	High
4	The coach provokes positive rivalry between team members.	3.55	0.91	Medium
5	The coach encourages interaction between team members and the formation of teams between them.	3.55	0.87	Medium
6	The coach adopts and supports new ideas.	3.49	0.88	Medium
7	The coach provides a positive atmosphere for the participation of team members in decision-making.	3.49	0.91	Medium
8	The coach encourages team members who have new ideas for the advancement of the team.	3.41	0.87	Medium
9	The coach rewards creative team members and offers moral incentives.	2.77	0.88	Medium
	Total	3.53	0.64	Medium

As for the results related to the dimension of motivation, the researchers indicated that this dimension was rated as medium. This may be attributed, from the researchers' point of view to the phrases that obtained the high means in the strategic intelligence measurement questionnaire related to the dimension of motivating players, like the coach communicates with the team, and convincing players to carry out the tasks required of them efficiently, also the coach's ability to motivate the players

Results related to the second question:

The results of the study indicated that there are no statistically significant differences at the level of significance ($\alpha \leq 0.05$) in the degree of practice of strategic intelligence by swimming coaches attributed to the gender variable. The researchers believe that this result is logical, as the strategic intelligence of swimming coaches encompasses various skills needed by coaches regardless of gender. Both male and female coaches have a perspective on the future, possess a future vision for the swimming coaching profession, motivate players, think systematically, and establish partnerships with coaches in other clubs.

Are there statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the average degrees of practice of swimming coaches of strategic intelligence attributed to the variable (gender)?

Table 9. Means, Standard Deviations, and Results of the T Test for the Degree of Strategic Intelligence According to the Gender Variable

Variable	Gender	No	Mean	Standard Deviation	T Value	Sig
Foresight	Male	32	3.63	0.57	3.35	0.12
	Female	13	3.33	0.61		
Organized thinking	Male	32	3.69	0.67	3.87	0.70
	Female	13	3.51	0.61		
Partnership	Male	32	2.45	1.05	3.77	0.22
	Female	13	1.92	0.84		
Future Vision	Male	32	3.44	0.87	3.56	0.14
	Female	13	3.01	0.82		
Motivation	Male	32	3.95	0.66	3.62	0.10
	Female	13	3.43	0.60		
Strategic Intelligence	Male	32	3.40	0.59	3.62	0.78
	Female	13	3.09	0.54		

Recommendations:

1. The need for swimming coaches to participate in courses and workshops specialized in the development of strategic intelligence.
2. The need to inform swimming coaches about the mechanisms of strategic decision-making.
3. Setting criteria for selecting and appointing swimming coaches based on specific factors to assess their ability to practice the dimensions of strategic intelligence.
4. Evaluating the performance level of swimming coaches based on clear criteria, avoiding favoritism and undue influence from others' opinions.

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درجة ممارسة الذكاء الإستراتيجي لدى مدربي السباحة في الأردن

الملخص :

هدفت الدراسة إلى تقصي درجة ممارسة الذكاء الإستراتيجي لدى مدربي السباحة في الاردن، كما هدفت إلى تقصي ما إذا كان هناك فروق في ممارسة الذكاء الاستراتيجي لمدربي السباحة تبعاً لمتغير النوع الاجتماعي. تكونت عينة الدراسة من (45) مدرباً للسباحة منهم (32) مدرباً و(13) مدربة تم اختيارهم عشوائياً ممن يعملون في مهنة تدريب السباحة، إستخدم الباحثون المنهج الوصفي لمناسبته لطبيعة الدراسة واهدافها، ولتحقيق اهداف الدراسة تم إعداد استبانة لجمع البيانات من عينة الدراسة حيث تكونت الاستبانة من جزئين: الجزء الاول معلومات ديموغرافية لمدربي السباحة، والجزء الثاني تكون من (35) فقرة موزعة على عناصر الذكاء الاستراتيجي التالية (الاستشراف، الرؤية المستقبلية، الشراكة، التحفيز، التفكير المنظم). بعد ان قام الباحثون بالتحقق من معاملات الصدق والثبات. وبعد تحليل البيانات توصلت الدراسة الى أن درجة ممارسة مدربي السباحة للذكاء الاستراتيجي جاءت بدرجة متوسطة، كما أشارت الدراسة إلى عدم وجود فروق ذات دلالة إحصائية في متوسط ممارسة مدربي السباحة للذكاء الإستراتيجي تعزى لمتغير (النوع الاجتماعي). وفي ضوء نتائج الدراسة، يوصي الباحثون بمشاركة المدربين في دورات وورش عمل لتنمية درجة الذكاء الإستراتيجي لديهم.

الكلمات الدالة: الذكاء الاستراتيجي، المدربين، الاردن، السباحة.

The validity of the Borg Scale for perceived exertion in determining levels of aerobic exercise intensity through physiological and performance measurements during and after Ramadan

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Abstract:

The self-regulation of exercise intensity is essential in promoting consistent exercise engagement using validated tools such as the Borg scale. Nonetheless, the validation of the Borg scale within the context of Arabic-speaking populations during the month of Ramadan had not been explored before. This study aimed to determine the usability of the Borg scale in measuring perceived exercise exertion during and after fasting in Ramadan, to generate various levels of aerobic exercise intensity, and its relationship with physiological response (heart rate) and performance capacity (running speed). Eighteen healthy males with a mean \pm SD age of 21.84 ± 1.37 years participated in this study. Each participant was asked to run on a treadmill for 3 trials at low, medium, and high perceived intensities, during which the physiological and performance responses were measured. All procedures were conducted during the 2nd and 4th weeks of Ramadan and the 2nd week after Ramadan. Significant differences were found in produced physiological and performance responses among all intensities at all study times. The results indicate the validity of the Borg scale and its capability to produce different levels of aerobic intensity during and after Ramadan. Furthermore, findings show that Ramadan may lead to physiological adaptations after 4 weeks from its beginning.

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Key Words: Exercise Physiology, Borg Scale, Perceived Exertion, Heart Rate, Running Speed, Fasting, Aerobic Training.

Introduction:

The perception of physical exertion intensity, commonly referred to as exercise perception, encompasses the subjective experience of exertion, fatigue, discomfort, and strain during physical activity (Noble & Robertson, 1996). This concept rests on the principle that individuals engaged in sports and physical exercise can monitor their levels of fatigue, musculoskeletal strain, and cardiovascular stress. Various scales, such as the Borg scale for Ratings of Perceived Exertion (RPE), have been employed globally to objectively assess perceived intensity across different sports and physical activities. The American College of Sports Medicine (ACSM) has endorsed the use of perceived intensity scales as credible tools for assessing and regulating exercise intensity during training, offering simplicity, practicality, accuracy, and cost-effectiveness.

Athletes and sports participants typically assess training intensity through various means, including heart rate, blood lactate levels, oxygen consumption, or resistance levels. Nevertheless, perceived exertion measurement remains the most prevalent method applicable across diverse activities, irrespective of intensity or energy system dominance. Since its inception in 1962, the Borg Scale has served as the primary reference for quantifying perceived exercise intensity globally, widely utilized for measuring physiological and performance intensity levels based on perceptual exertion (Borg, 1962).

The psychophysical intensity perceived during sports activity is influenced by various physiological changes (muscular, metabolic, neural) occurring in the body during physical exertion. This psychophysical intensity can be quantified using perceived intensity scales like the Borg scale (Robertson, 2004). The ease of assessing physical effort intensity via perceived intensity contributes significantly to maintaining training consistency and participation in physical activities, thereby enhancing athletic training outcomes.

Monitoring training intensity is a cornerstone of effective training programs, prioritizing individual variances and overall player safety. The Borg scale's reliability has been validated across diverse cultures, languages, and environmental conditions, consistently demonstrating robust psychometric properties (Balasekaran et al., 2005; Buckley et al., 2000; Byrne & Eston, 1998; Dabayeb, 2011). However, its validity during the fasting month of Ramadan remains unexplored, despite its widespread use during this period (Boukhris et al., 2019; Chtourou et al., 2011; Fashi et al., 2021; Hsouna et al., 2020).

Further research into the impact of Ramadan fasting and intermittent fasting diet on perceived exercise intensity is warranted to understand its effect on measurement credibility and cognitive ability to assess and sustain desired exercise intensity, particularly given the upcoming UEFA European Football Championship coinciding with Ramadan. During Ramadan, Muslims observe fasting from sunrise to sunset for approximately 30 consecutive days, involving daily fasting periods of over 14 hours with unrestricted evening food and drink intake, leading to significant lifestyle adjustments in sleep, nutrition, and mental state (Chtourou et al., 2011).

Despite these challenges, Muslim athletes continue training, adapting their routines based on pre-Ramadan intensity levels. Traditionally, most Muslim athletes rely on methods like heart rate and lactate threshold to monitor exercise intensity during Ramadan. However, these methods are susceptible to factors such as dehydration, nutritional deficiencies, and sleep deprivation (Boukhris et al., 2019). Despite increasing research during Ramadan, understanding cognitive variables associated with exercise intensity remains limited, with disparate findings (Abaidia et al., 2020).

Reliable and objective tools for measuring exercise intensity can enhance understanding of Ramadan's impact on training, physiological, and psychological variables among athletes and sports participants. There is no consensus on Ramadan's effect on exercise performance, with studies showing variable results on aerobic and anaerobic capacity across different intensity levels (Abdelmalek et al., 2022; Chtourou et al., 2011). Factors such as insufficient sleep and dietary changes during Ramadan have been implicated in affecting athletic performance (Lipert et al., 2021). Insufficient training during Ramadan may contribute to performance decline (Abdelmalek et al., 2022), affecting both local and international competitions for Muslim athletes (Lipert et al., 2021).

Many coaches report that Muslim athletes fasting during Ramadan may struggle to adapt to training, potentially reducing training frequency and intensity. Studies indicate that individuals during Ramadan may experience fatigue, lethargy, mood fluctuations, and diminished ability to sustain training intensity (Borg, 1962; Buckley et al., 2000). Adaptation strategies during Ramadan, such as adjusting training frequency, intensity, duration, and timing, may result in decreased physical fitness and performance levels. Thus, using a validated tool to determine the exercise intensity may help to avoid such a decrement in performance.

Variations in adaptation behaviors, cultural factors, geographical regions, and temperature fluctuations contribute to inconsistent study findings on Ramadan fasting's impact on physical activity and athletic performance (Abdelmalek et al., 2022). Previous studies' discrepancies in athletic performance during Ramadan may stem from inadequate assessment methods (Al-Nawaiseh et al., 2021; Balasekaran et al., 2008; Byrne & Eston, 1998; Dabayeb, 2011), lack of detailed training descriptions (Al-Nawaiseh et al., 2021; Aziz et al., 2012; Balasekaran et al., 2008; Bar-Or & Reed, 1986; Borg, 1961; Borg, 1962; Buckley et al., 2000; Byrne & Eston, 1998; Dabayeb, 2010, 2011), and absence of non-fasting control groups for comparison (Abdelmalek et al., 2022; Balasekaran et al., 2005; Boukhris et al., 2019; Hsouna et al., 2020).

Globally, coaches typically employ traditional methods like heart rate monitoring, distance covered, or resistance levels to determine exercise intensity, focusing on external loads. However, internal stress, or perceived exertion, plays a crucial role in athletes' experiences during fasting (Balasekaran et al., 2008). Therefore, establishing a link between fasting during Ramadan and exercise performance from a self-perceived cognitive perspective is essential.

Validating tools like the Borg scale for use during Ramadan can assist coaches in adjusting training intensity levels, minimizing fasting's impact on training programs, and maintaining acquired adaptations. Understanding athletes' stress levels during Ramadan can prevent overtraining and severe fatigue, preserving performance levels throughout the fasting period (Chtourou et al., 2011; Fashi et al., 2021).

The objectives of this study were twofold: (1) to evaluate the effectiveness (validity) of the Borg scale in assessing perceived exertion during and after fasting in Ramadan across different levels of aerobic exercise intensity, and (2) to examine the influence of fasting on physiological response (heart rate) and performance capacity (running speed) measured through the Borg scale of exercise perception, at varying levels of aerobic exercise intensities.

Materials & Methods:

Design and Ethics :

The study employed a upcoming quasi-experimental design, aligning with its objectives. Prior to participation, the potential benefits and risks associated with involvement in the experiment were thoroughly explained to the participants. After comprehensive clarification of all experimental procedures, interested participants provided informed written consent. Approval for the study procedures was obtained from the Institutional Review Board of the University of Jordan (IRB No. 20244241, Date: 2024).

Study sample:

A total of 18 participants successfully completed the three sessions of the experiment. Before their involvement, all participants completed a comprehensive general health survey to ensure they were in good health, without any symptoms of illness or injuries. Their commitment to fasting throughout the month was confirmed through personal interviews conducted with each participant prior to engaging in the physical experiments. Notably, the cohort comprised Muslim individuals who had observed fasting practices throughout the month of Ramadan since a young age, typically starting at 7 or 8 years old. Measurements of body mass (in kilograms) and height (in centimeters) were obtained using a medical scale and a stadiometer, respectively, after which the body mass index (BMI) was computed.

Procedures:

The study was conducted during the month of Ramadan, with the daily fasting period spanning from 5 AM to 7 PM, resulting in an average fasting duration of 14 hours per day. Previous research on perceived exertion has utilized two distinct methods for employing perceived exertion scales. The first method, termed "production of intensity," involves participants generating a specific level of training intensity (e.g., speed) corresponding to a given number on the scale. For instance, participants may be instructed to run at level 13 on the Borg scale, representing moderate intensity, with their resulting speed subsequently measured (Dabayeb, 2011). The second method, known as the "estimation of intensity," entails participants estimating the level of exertion using a provided scale (e.g., the Borg scale) based on the exercise intensity determined by the examiner (Robertson et al., 2000).

Participants underwent familiarization and training in the use of the Borg scale (anchoring the perceptual range as suggested by Noble and Robertson, 1996) at various intensity levels, employing both production and estimation methods prior to the onset of Ramadan, conducted on a treadmill (Life Fitness Treadmill, USA) (Dabayeb, 2010; Robertson, 2004). However, the present study exclusively employed the first method (production on the Borg scale for perceived exertion).

The Borg scale, comprising 15 points for Rating of Perceived Exertion (RPE), ranges from 6 denoting "no exertion" to 20 representing "very hard." Guidelines for forward/backward translation were adhered to for the Borg scale to develop the final version in Arabic (Sperber, 2004).

During each session, participants engaged in treadmill running at randomly assigned Borg intensity levels (one of the three pre-determined exercise intensity levels), for a duration of two minutes (Buckley et al., 2000; Dabayeb, 2010; Dabayeb et al., 2012). Participants had the autonomy to adjust treadmill speed based on their perceived exertion to align with the specified Borg intensity level designated by the examiner. However, during

the third minute, participants were required to maintain a constant speed without further adjustments. At the conclusion of the third minute, treadmill speed (expressed in kilometers per hour: km/h) was documented to assess performance capacity, while heart rate (measured in beats per minute) was recorded to evaluate physiological response. Importantly, participants remained unaware of these indicators throughout the experiment.

Continuous monitoring of heart rate occurred throughout the experiment, with recordings taken during the final ten seconds of each minute utilizing a remote measuring system equipped with a chest strap (Polar Electro, Kempele, Finland). This protocol was replicated for each of the three intensity levels within every session. Adequate recovery time was allowed for subjects between trials to permit heart rate recovery (to reach within 10% of pre-exercise HR). The experiments were conducted twice during Ramadan (in the 2nd and 4th weeks) and once post-Ramadan (in the 2nd week thereafter)."

Validity and Reliability of Study Instruments:

The validity and reliability of the study instruments were ensured through the utilization of meticulously selected devices and tools within the medical domain. These instruments were chosen based on their established validity and reliability, manufactured with precision, and employed in accordance with recommended standards provided by the manufacturer. Furthermore, these devices have been extensively utilized in prior studies within the sports domain, underscoring their reliability and suitability for this investigation.

Statistical Analysis:

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) for all statistical procedures. The variance between performance and physiological response levels resulting from the use of the scale at perceptual intensity levels during and after Ramadan was calculated. One-way repeated-measures analysis of variance (ANOVA) was used for produced intensity levels (heart rate and speed). Two-way repeated-measures ANOVA (3x3) was used to measure the time effect (the 2nd week of Ramadan, the 4th week of Ramadan, the 2nd week after Ramadan) and the Borg scale intensity levels (Buckley et al., 2000; Dabayeb, 2010). Linear regression and correlation analyses were conducted between self-perceived exercise intensity and physiological and performance exercise indicators (heart rate and speed) recorded in the last minute of each test trial. The significance level was set at $P < 0.05$.

Results:

Table 1 displays the characteristics of the study sample. Participants exhibited proficient comprehension of the Borg scale for perceived exertion and adeptness in generating intensity levels corresponding to various Borg categories, with 9 indicating low intensity, 13 for moderate intensity, and 17 for high intensity levels. **Tables 2** and **3** delineate the outcomes concerning physiological responses (heart rate) and performance capacity (running speed) across the three visits, encompassing the utilization of the Borg scale for perceptual intensity both during and post-Ramadan.

Table 1. Sample characteristics (N=18)

Variables	Mean ± SD	Range
Age (years)	21.89±1.37	20.00-26.00
Weight (kg)	73.44±11.35	57.00-97.00
Height (cm)	178.89±8.48	165.00-202.00
BMI	22.54±2.71	16.40-27.20
Fat percentage	12.29±2.92	7.50-18.90
Height/weight	0.84±0.07	0.64-0.92

Table 2. Physiological response (heart rate) according to the Borg scale intensity levels and visits

Borg scale level Visits	Low (9) Mean ± SD	Moderate (13) Mean ± SD	High (17) Mean ± SD
2 nd week of Ramadan	102.06±15.43	139.83±20.76	168.28±16.64
4 th week of Ramadan	95.89±14.80	128.06±22.43	160.33±21.90
2 nd week after Ramadan	105.56±11.18	134.67±18.30	163.67±17.25

Table 3. performance capacity (running speed) according to the Borg scale intensity levels and visits

Borg scale level Visits	Low (9) Mean ± SD	Moderate (13) Mean ± SD	High (17) Mean ± SD
2 nd week of Ramadan	3.9 ±1.38	8.18±2.03	11.28±2.35
4 th week of Ramadan	4.04±1.35	7.57±1.91	11.24±2.93
2 nd week after Ramadan	4.47±1.55	7.66±1.72	10.94±2.02

Reliability of the Borg scale among different perceived exertion intensity Borg levels:

1. Physiological response (heart rate) variable:

Table 4 presents the outcomes of a one-way repeated measures analysis for the heart rate variable, categorized by the perceived exertion variable and the week of measurement. The obtained significance level (P-value) was found to be highly significant (<0.001) during both the 2nd and 4th weeks of Ramadan. Similarly, the significance level for the post-Ramadan measurements was also highly significant (<0.001).

A comparison of these significant level values reveals that all calculated values were significant. This indicates that the differences observed among the mean values of heart rate, serving as a physiological indicator, across the three intensity levels (17, 13, 9), corresponding to high, moderate, and low intensity, respectively, are statistically significant in each visit, whether during the fasting month of Ramadan or post-Ramadan (Figure 1). Consequently, this underscores the participants' capacity to elicit varying degrees of physiological exertion, as reflected in heart rate, through the utilization of the Borg scale.

Table 4. One-way repeated measures ANOVA for the heart rate variable among perceived exertion intensities in each measurement visit

Visits	Source	Sum of squares	df	Mean of squares	F-Value	P-Value
2 nd week of Ramadan	RPE	39729.78	2	19864.89	140.98	<0.001
	Error	4790.89	34	140.91		
4 th week of Ramadan	RPE	37377.81	2	18688.91	121.88	<0.001
	Error	5213.52	34	153.34		
2 nd week after Ramadan	RPE	30392.15	2	15196.07	118.89	<0.001
	Error	4345.85	34	127.82		

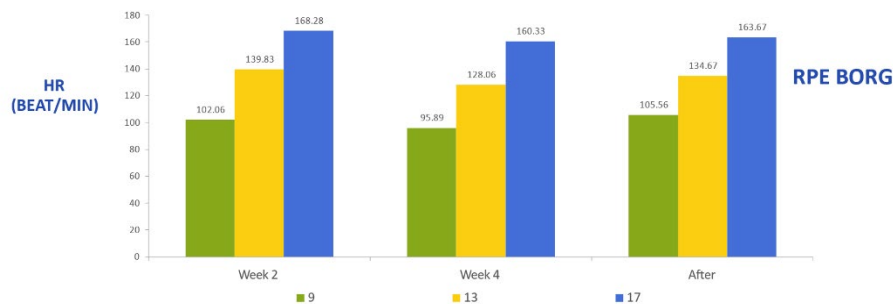


Figure (1). Heart rate increase with the increase in the Borg scale levels.

Table 5 displays the findings of a simple linear regression analysis aimed at predicting heart rate values based on perceived exertion for each measurement visit. Examination of the R² values, which represent the proportion of variance explained by the predictive model, reveals substantial explanatory power. Specifically, the predictive model achieved an R² value of 70.7% in the second week of Ramadan, 64.7% in the fourth week of Ramadan, and 70.2% in the second week after the end of Ramadan. These values indicate a high level of predictability, showing that the perceived exertion variable alone can explain a significant portion of the variance or difference in heart rate values. The final column of the table presents the formulated linear equations intended for predicting heart rate values based on the perceived exertion variable."

Table 5. Simple linear regression analysis to predict heart rate values through perceived exertion in each measurement visit

Visits	R	R ² (%)	B	SE	Constant	Equation
2 nd week of Ramadan	0.841	70.7	8.28	0.74	29.11	HR=8.28 PE + 29.11
4 th week of Ramadan	0.804	64.7	8.06	0.83	23.37	HR=8.06 PE + 23.37
2 nd week after Ramadan	0.838	70.2	7.26	0.66	40.20	HR=7.26 PE + 40.20

2. Performance capacity (running speed) variable:

Table (6) presents the outcomes of a one-way repeated measures ANOVA conducted on the speed variable, categorized by perceived exertion and measurement visit. Upon examining the significance level values, it becomes apparent that all reached <0.001 for the second and fourth weeks of Ramadan, as well as the second week after Ramadan. This signifies that the observed differences among the calculated mean values for the three exertion levels are statistically significant in each measurement visit, as illustrated. This underscores the efficacy of the Borg perceived exertion scale in eliciting diverse levels of performance exertion, as indicated by running speed.

Table 6. One-way repeated measure ANOVA for the speed variable based on perceived exertion in each measurement visit

Visits	Source	Sum of squares	df	Mean of squares	F-Value	P-Value
2 nd week of Ramadan	RPE	484.01	2	242.00	118.93	<0.001
	Error	69.19	34	2.03		
4 th week of Ramadan	RPE	465.90	2	232.95	104.64	<0.001
	Error	75.69	34	2.23		
2 nd week after Ramadan	RPE	377.03	2	188.52	184.57	<0.001
	Error	34.73	34	1.02		

Table (7) presents the outcomes of simple linear regression analysis aimed at predicting speed values based on perceived exertion for each measurement visit. Evaluation of the R² values for the predictive model reveals notable explanatory power. Specifically, the model achieved an R² value of 70.6% for the second week and 66.1% for the fourth week of Ramadan. Regarding the measurements taken after Ramadan, it reached an R² value of 70.2%. These values indicate a substantial ability of the perceived exertion variable, as the sole predictor, to account for the variance or difference in speed values. The final column of the table presents the formulated linear equations intended for predicting speed values based on the perceived exertion variable.

Table 7. Simple linear regression analysis to predict speed values through perceived exertion based on the Borg scale in each measurement visit

Visits	R	R ² (%)	B	SE	Constant	Equation
2 nd week of Ramadan	0.840	70.6	0.91	0.08	- 4.06	Speed= 0.91 PE - 4.06
4 th week of Ramadan	0.813	66.1	0.89	0.09	- 4.07	Speed=0.89 PE - 4.07
2 nd week after Ramadan	0.838	70.2	0.81	0.07	- 2.83	Speed=0.81 PE - 2.83

Reliability of the Borg scale among measurement visits at each level of perceived exertion intensity:

1. Physiological response (heart rate) variable:

Table (8) presents the outcomes of a one-way repeated measures ANOVA conducted on the heart rate variable across the measurement visits, stratified by each level of perceived exertion intensity. Upon inspection of the significance level values, it is observed that for the perceived exertion levels of 9 and 13, the values were 0.010 and 0.043, respectively. However, for the perceived exertion level of 17, the P value was not significant (0.167). This indicates statistically significant differences in the heart rate variable across the three measurement visits for perceived exertion levels of 9 and 13. Conversely, no significant differences in the heart rate variable across the three measurement visits were observed for the perceived exertion level of 17. In summary, while there are statistically significant differences in the heart rate variable for the perceived exertion levels of 9 and 13 between the measurement weeks, no such significant differences were observed at the perceived exertion level of 17.

Table 8. One-way repeated measure ANOVA for the heart rate variable for each level of exertion according to the measurement visits

Borg level of exertion	Source	Sum of squares	df	Mean of squares	F-Value	P-Value
9	Visit	862.33	2	431.17	5.32	0.010
	Error	2755.00	34	81.03		
13	Visit	1254.70	2	627.35	3.46	0.043
	Error	6166.63	34	181.37		
17	Visit	572.93	2	286.46	1.89	0.167
	Error	5159.74	34	151.76		

Table (9) presents the outcomes of the least significant difference test for the heart rate variable across each level of exertion relative to the measurement visit. Analysis of the differences reveals significant variances primarily observed in the second and fourth weeks for both exertion levels 9 and 13.

Specifically, for force level 9, differences were noted between the second and fourth weeks of Ramadan, favoring the second week where the average heart rate value was higher. Similarly, for exertion level 13, differences were observed between the second and fourth weeks of Ramadan, again favoring the second week with a higher average heart rate value.

Moreover, an additional difference was identified in exertion level 9 between the fourth week of Ramadan and the second week after Ramadan. Here, the significance of the difference favored the second week after Ramadan, where the average heart rate value was the highest among the measured visits.

Table 9. Results of the least significant difference test for the heart rate variable for each exertion level according to the measurement visits

Borg level of exertion	Mean of heart rate (beat/min)	Visits		
		2 nd week of Ramadan	4 th week of Ramadan	2 nd week after Ramadan
9	102.06	2 nd week of Ramadan	*	
	95.89	4 th week of Ramadan		*
	105.56	2 nd week after Ramadan		
13	139.83	2 nd week of Ramadan	*	
	128.06	4 th week of Ramadan		
	134.67	2 nd week after Ramadan		

2. Performance capacity (running speed) variable:

Table (10) displays the outcomes of a one-way repeated measures ANOVA conducted on the speed variable, stratified by the level of perceived exertion and the measurement visit. Upon examination of the significance level values, it is apparent that they reached 0.263 for perceived exertion level 9, 0.373 for perceived exertion level 13, and 0.783 for perceived exertion level 17.

Comparing these values with the conventional threshold of 0.05, it is evident that the calculated values were greater, indicating that the observed differences in the calculated mean values across the three measurement visits were not statistically significant for each level of perceived exertion.

This suggests that the produced speed at each level of exertion, and across the three levels of exertion, remains unaffected significantly by reliance on the perceived exertion scale during Ramadan. Thus, it confirms the participants' ability to maintain similar levels of mechanical or performance exertion (speed) at the same perceived exertion or load both during and after Ramadan.

Table 10. Results of one-way repeated measures ANOVA for the speed variable distributed by the level of perceived exertion and the measurement visits

Borg level of exertion	Source	Sum of squares	df	Mean of squares	F-Value	P-Value
9	Week	2.57	2	1.28	1.39	0.263
	Error	31.39	34	0.92		
13	Week	3.88	2	1.94	1.02	0.373
	Error	64.88	34	1.91		
17	Week	1.24	2	0.62	0.25	0.783
	Error	85.51	34	2.51		

Discussion:

Numerous studies worldwide have explored the impact of fasting on physical performance (Al-Nawaiseh et al., 2021; Castilho et al., 2021; Stannard & Johnson, 2004; Stannard, 2011). Some of these investigations utilized perceived exertion scales as a means to gauge and determine levels of physiological or performance exertion during Ramadan fasting, albeit without validating the reliability of these scales in the Arabic language (Chtourou et al., 2011).

The primary objective of this study was twofold: firstly, to ascertain participants' proficiency in utilizing the Borg scale during sports activities to achieve predetermined levels of exercise intensity for low, moderate, and high loads during Ramadan. Secondly, to elucidate the effects of fasting on physiological and performance variables based on perceived exertion measurement tools.

The first perceived exertion scale was developed by Borg in 1962 (Borg, 1961; Borg, 1962), and since then, physiological indicators have been employed to corroborate the practical application of perceptual concepts extensively (Dabayeb, 2013; Nakkanung et al., 2012; Robertson et al., 2000). This study represents the first attempt to validate the Borg Ratings of Perceived Exertion (RPE) scale for adults in the Arabic language and culture during Ramadan fasting, using exertional efforts as a means of verification. To the best of our knowledge, no prior investigations have undertaken the validation of these measures during the fasting period of Ramadan.

The findings of this study suggest that participants were proficient at achieving the prescribed exercise intensity levels using the Borg scale during both Ramadan fasting and after Ramadan. Utilizing the Borg perceived exertion scale, they demonstrated the ability to accurately discern and attain intensity levels as instructed by the examiner, without access to or knowledge of physiological or performance variables typically monitored via electronic sports devices, such as heart rate or treadmill speed. The escalation in heart rate and running speed corresponded with increased perceived exertion levels, consistent across both fasting and post-fasting conditions (Balasekaran et al., 2008; Dabayeb, 2010; Robertson et al., 2000). Similarly, correlations between physiological and performance variables on one hand and perceptual variables on the other were coherent. These results are in line with prior studies affirming the reliability of the scale across diverse populations, exercise patterns, languages, and cultures, albeit not specifically during Ramadan fasting (Castilho et al., 2021).

Furthermore, this study confirms the Borg perceived exertion method's efficacy in eliciting desired levels of aerobic exertion during Ramadan, irrespective of fasting or post-fasting states, in a largely uniform manner. This indicates that participants' perceptual ability regarding exercise intensity remained largely unaffected by Ramadan fasting across low, moderate, and high exertion levels. This finding resonates with previous research conducted under various environmental conditions (Maw et al., 1993; Scherr et al., 2013).

Moreover, aside from a decrease in heart rate observed during the fourth week of Ramadan, no disparities were noted in physiological and performance exertion levels across perceived exertion categories between fasting and non-fasting conditions. The observed decrease in heart rate suggests a potential physiological adaptation after prolonged fasting, possibly attributable to improved hydration status and enhanced stroke volume over time during fasting. This finding aligns with studies highlighting physiological adaptations to Ramadan fasting, such as increased fat utilization over carbohydrates during aerobic exertion (Stannard & Johnson, 2004; Stannard, 2011). This finding further suggests the need for specific Ramadan coping strategies to avoid possible dehydration (Djemai et al., 2020).

These results underscore the practical utility of the Borg scale in measuring external or performance exertion (e.g., treadmill speed) through internal (perceived) exertion standards. The scale's credibility and accuracy appear independent of fasting states, and fasting did not substantially influence participants' ability to achieve desired intensity levels. The validation of the scale during Ramadan fasting in this study suggests that a specific perceived exertion scale for use during Ramadan may be unnecessary, consistent with prior findings (Maw et al., 1993).

Additionally, the study indicates a positive correlation between perceived exertion levels on the Borg scale and physiological/performance indicators, such as heart rate and running speed, during exercise tests. This

finding supports the efficacy of using perceptual exertion in designing training programs (Scherr et al., 2013) and underscores the Borg perceived exertion method's cost-effectiveness and simplicity in determining exercise intensity with high credibility and accuracy.

However, it is imperative to further validate the use of the Borg scale during Ramadan fasting through additional studies. Cultural, geographical, environmental, and dietary factors prevalent in different Islamic regions during Ramadan may influence or alter the study results, as evidenced by previous research highlighting the role of these variables. Methodologically, employing more than three exertion levels may yield more precise and credible results than those obtained in this study. Consequently, the generalizability of the current findings remains limited, underscoring the need for similar investigations across diverse regions, conditions, and sports, encompassing both male and female participants and spanning more than three exertion levels.

Furthermore, exploring potential physiological adaptations, such as hydration levels and stroke volume, and understanding their correlation with perceived exertion due to fasting towards the end of Ramadan, warrants further investigation.

Conclusions:

In this study, participant's demonstrated proficiency in utilizing the Borg scale for perceived exertion to effectively achieve prescribed physiological and performance exertion levels across three categories: low, moderate, and high during and after Ramadan. Physiological and performance variables consistently mirrored perceptual variables, with indicators of exercise intensity escalating in tandem with perceived exertion. Participants exhibited the capacity to self-regulate exercise intensity internally, adjusting exertion levels as required based on the Borg scale. These findings support previous research affirming the reliability of the Borg scale across diverse conditions, prompting the recommendation for further investigations across varied circumstances and demographic groups, including both males and females.

Recommendations:

The Borg scale for perceived exertion has been recommended for further research. It should be incorporated into studies to assess gender-specific differences and age diversity. The scale should also be explored for its applicability in various environmental conditions, physical activities, and seasonal effects. Longitudinal studies should be conducted to understand how perception of exertion and self-regulation change over time. Technological integration, such as wearable technology and mobile applications, could enhance user engagement and accuracy. Psychological and cognitive factors, such as mental fatigue and motivation, should also be explored. Furthermore, the scale can be beneficial in clinical and rehabilitation settings, such as those involving cardiovascular disease or respiratory conditions.

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مدى صلاحية مقياس بورغ (Borg) للشده المدركه لتحديد مستويات شدة التمرين الهوائية من خلال القياسات الفسيولوجية والأدائية في شهر رمضان

الملخص :

ان تنظيم الشدة الادراكية للتمارين البدنية ضروري لتعزيز الالتزام المستمر بممارسة الرياضة باستخدام أدوات معتمدة مثل مقياس بورغ. ومع ذلك، فإن التحقق من صحة استخدام مقياس بورغ في سياق الناطقين باللغة العربية خلال شهر رمضان لم تتم دراسته من قبل. وعليه، هدفت هذه الدراسة إلى تحديد مناسبة (صلاحية) استخدام مقياس بورغ في قياس الشدة الادراكية أثناء وبعد الصيام في شهر رمضان لتوليد مستويات مختلفة من شدة التمارين الهوائية وعلاقتها بالاستجابة الفسيولوجية (معدل ضربات القلب) وقدرة الأداء (سرعة الجري).

شارك في هذه الدراسة ثمانية عشر شاباً يتمتعون بصحة جيدة بمتوسط عمر يبلغ 21.84 ± 1.37 سنة. تضمنت اجراءات الدراسة الطلب من كل مشارك الجري على جهاز المشي في ثلاث تجارب ونتاج شدة منخفضة (9) ومتوسطة (13) وعالية (17) بالاعتماد على الادراك فقط من خلال النظرالى المقياس العالمي بورغ (6-20)، حيث تم قياس الاستجابات الفسيولوجية والأداء على كل مستوى من الشدة. تم إجراء جميع الإجراءات السابقة في الأسبوعين الثاني والرابع من شهر رمضان وبعد اسبوعين من انتهاء شهر رمضان.

تضمنت النتائج ايجاد فروقات كبيرة في الاستجابات الفسيولوجية ومؤشرات الأداء الناتجة عن جميع مستويات الشدة في جميع أوقات الدراسة. وتشير النتائج إلى صحة مقياس بورغ وقدرته على إنتاج مستويات مختلفة من الشدة الهوائية أثناء وبعد الصيام في شهر رمضان. وعلاوة على ذلك، تُظهر النتائج أن رمضان قد يؤدي إلى تكيفات فسيولوجية بعد 4 أسابيع من بدايته.

الكلمات المفتاحية: فسيولوجيا التدريب، مقياس بورغ، الجهد المبذول، معدل ضربات القلب، سرعة الركض، الصيام، التدريب الهوائي.

Attitudes of Physical Education Teachers Towards Obese Students

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Abstract:

The self-regulation of exercise intensity is essential in promoting consistent exercise engagement using validated tools such as the Borg scale. Nonetheless, the validation of the Borg scale within the context of Arabic-speaking populations during the month of Ramadan had not been explored before. This study aimed to determine the usability of the Borg scale in measuring perceived exercise exertion during and after fasting in Ramadan, to generate various levels of aerobic exercise intensity, and its relationship with physiological response (heart rate) and performance capacity (running speed). Eighteen healthy males with a mean \pm SD age of 21.84 ± 1.37 years participated in this study. Each participant was asked to run on a treadmill for 3 trials at low, medium, and high perceived intensities, during which the physiological and performance responses were measured. All procedures were conducted during the 2nd and 4th weeks of Ramadan and the 2nd week after Ramadan. Significant differences were found in produced physiological and performance responses among all intensities at all study times. The results indicate the validity of the Borg scale and its capability to produce different levels of aerobic intensity during and after Ramadan. Furthermore, findings show that Ramadan may lead to physiological adaptations after 4 weeks from its beginning.

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Key Words: Obesity, stigmatization, physical education.

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Introduction:

Obesity is a complex and multifactorial issue whose occurrence has significantly increased in recent years (Low et al., 2009). Obese individuals frequently experience weight-related stigmatization, which encompasses negative attitudes and beliefs about body weight, manifesting as stereotypes, prejudices, and unfair treatment (Puhl, 2009). Defining school violence is challenging, as it can manifest in various forms within the classroom or during lessons. Beyond physical aggression, school violence includes discrimination based on ethnic or social origin, gender, or clothing style. Stigmatization, a relational process distinguishing the stigmatized from the "normal," is another prevalent form of violence. Approximately 90% of adolescents report witnessing stigmatizing behaviors toward their peers, with 45% identifying weight as the primary characteristic for which young people are most likely to be bullied at school, followed by sexual orientation (Puhl, Luedicke, & Heuer, 2011).

Stigmatization can manifest through inappropriate verbal comments such as teasing, insults, or derogatory remarks, as well as social exclusion and physical aggression (Puhl, 2009). These behaviors can have severe consequences for the psychological and physiological health of obese individuals, increasing their risk of depression and anxiety (Puhl et al., 2009).

In the school environment, accommodating a student who is partially fit for physical education presents a unique challenge for teachers, who must assess the extent to which the obese student can participate in physical activities. Several studies have examined the ability of physical education teachers to motivate children to engage in physical activities (Ames, 1992; Lewis, Fraser, & Manby, 2014). However, there is a paucity of research on the behaviors physical education teachers should adopt to avoid discriminating against obese children (MacLean et al., 2009).

Given the alarming increase in the number of overweight children and adolescents (Ogden, Flegal, Carroll & Johnson, 2002), stigmatization likely affects a significant number of young people (Strauss & Pollack, 2003). Education is considered the most promising path for future efforts to reduce stigmatization (Puhl, Moss-Racusin, Schwartz, & Brownell, 2008). Therefore, it is crucial to understand how physical education teachers can create a context for physical activities that minimizes stereotypes towards overweight students (li & Li, 2008). Effective interventions aimed at reducing weight-related stereotypes in physical education must be developed (Greenleaf, Martin & Rhea, 2008). Despite the necessity of interventions against weight discrimination (Losekam et al., 2010), there is limited research on the stigmatizing attitudes of physical education teachers (O'Brien et al., 2007).

Based on this literature, we pose the following question: What attitudes do physical education teachers adopt towards obese students?

Methodology:

Exploratory Survey:

We conducted semi-structured interviews (comprising 5 questions, see Appendix 1) with 5 physical education teachers.

The Sample:

Three obese students, nine physical education teachers, and three physical education inspectors agreed to participate in this study.

Table 1. Characteristics of the Study Population

Population	Number	Gender	Age	Experience
Obese students	3	Girls : 1 Boys : 2	Girls : 13 years Boys : 15 years	
Physical education teachers	9	Wemen : 2 Men : 7	Wemen : 2 between 30 and 35 years Men : 5 between 30 and 35 years. 2 between 40 and 45 years	2 Wemen : 7ans 5 Men : 7ans
Physical education inspectors	3	Men : 3	Men : 3 between 45and 55 years	2 Wemen : 16 ans 2 Men : 7 ans 1 Men : 11 ans

After contacting the relevant organizations and obtaining the necessary permissions, the interviews were conducted. Interviewees responded anonymously to the questions.

Measurement Tools:

The selection of semi-structured interviews was driven by their potential to provide comprehensive insights into our research question and objectives. This qualitative method is particularly effective in capturing the "feelings and experiences" of respondents. One of its primary strengths lies in its ability to uncover unexpected or understudied phenomena that may be overlooked in quantitative research (Taylor et al., 2009). Data collection was conducted through semi-structured interviews. This approach involved the construction of an interview guide comprising several open-ended questions designed to elicit perceptions, thoughts, and experiences related to the three chosen themes (Thompson, Humbert, & Mirwald, 2003).

The interview questions were organized thematically, with the use of a guide featuring open-ended questions enabling "flexible" interviews. This structure allowed participants to freely share and express their experiences. The study included interviews with three obese students, nine physical education teachers, and three physical education inspectors. A total of 15 interviews were conducted, recorded with the prior consent of the participants, and transcribed in the appendices of the thesis. These semi-structured interviews aimed to verify and deepen the research question, providing a rich, nuanced understanding of the subject matter.

Conduct of the Survey:

For each respondent, the interview was conducted at their workplace during May 2018. Each interview was initially planned to last 30 minutes.

Results:

1. Semi-structured Interviews with Physical Education Teachers

The semi-structured interviews with physical education teachers revealed differences in attitudes, some of which favour the stigmatization of obese students during physical activities.

• Negative Prejudices:

-The comments from the nine physical education teachers revealed that they assess students' athletic abilities based on their weight, implying that knowing a student's weight is sufficient to determine their sports proficiency. The teachers also expressed the belief that obese students lack physical abilities and face spatial and temporal challenges in producing physical performance, despite the fact that sports performance is evaluated in both spatial and temporal contexts.

-These prejudices can lead physical education teachers to focus solely on what obese students are unable to achieve. Consequently, they hold reduced expectations regarding the personality and social skills of obese students. These biases also negatively impact the perceived reasoning, cooperation, skills, and sports abilities of these young individuals.

-One teacher (Teacher 05) articulated the hypothesis that "an obese student with overweight cannot perform exercises requiring physical qualities such as flexibility, speed, endurance, but can do exercises requiring strength."

-It was concluded that maintaining low expectations for the physical abilities of obese students poses significant challenges for the effective implementation of physical education programs (Peters & Ruan, 2010).

• Creation of a Stigmatizing Environment:

- The evaluation process is a critical moment for teachers to justify their pedagogical choices, revealing the values underlying their strategies.

- Based on the analysis of responses, the teachers in our study indicated that they employ special criteria to grade obese students, aiming to motivate them and help them achieve favorable grades relative to their peers. However, this strategy inadvertently highlights the difference between obese students and their peers. The focus on the student's pleasure, development, and well-being from the outset creates an environment that fosters stigmatization.

- For instance, Teacher 08 states, "I always try to find a special grading scale and criteria to appreciate the efforts of obese students during sessions and their progress."

- Similarly, Teacher 07 explains, "I always choose a special grading scale and criteria that align with their progress during the cycle and their abilities, to give them the opportunity to get good grades like their non-obese peers. Physical education is not about performance."

- Pierce and Wardle (1997) reported that obese students often feel excluded during physical activities.

Table 2. Attitudes of Physical Education Teachers

Categories	Sub categories
Negative Prejudices	Passive, Lazy, Shy, Inactive, Weak, Low self-confidence
Exclusion from Physical Activity	Classification in low level, less important tasks, Facilitated exercises, Assignment of easy roles
Creation of a Stigmatizing Environment	Special grading scale, Special criteria, Specific contract within the group, Competitive games between groups, Activities increasing aggressiveness,

The results of our research enable the identification of negative attitudes among physical education teachers that contribute to the stigmatization of overweight and obese children during physical education sessions.

Three themes emerge in identifying the stigmatizing attitudes of physical education teachers towards obese students: negative prejudices, exclusion during physical activity, and the creation of a stigmatizing environment. These themes will be examined in comparison with existing literature, leading to the development of recommendations for each theme.

Discussion

Negative prejudices:

In the analysis of interviews with obese students and physical education teachers, as well as in other studies, it has been observed that physical education teachers often harbor negative prejudices against obese students. These biases, in our view, can lead teachers to concentrate solely on the perceived limitations of obese students. Consequently, physical education teachers tend to hold reduced expectations concerning the personality, skills, and athletic abilities of these youths.

This phenomenon aligns with the research findings of Li and Rukavina (2012), which indicate that prejudices related to personality, social skills, and athletic abilities, as identified by physical education teachers, contribute to the stigmatization of obese students. Peters and Ruan (2010) have concluded that such diminished expectations regarding the physical capabilities of overweight youth pose significant challenges for the effective implementation of physical education programs. Additionally, O'Brien et al. (2007) have advocated for the inclusion of weight bias reduction programs in physical education teacher training. We posit that it is crucial for physical education teachers to recognize their lowered expectations, as this awareness would promote equitable expectations for all students and help mitigate discrimination.

Exclusion during physical activity:

In the analysis of interviews with obese students and physical education teachers, as well as in other studies, it has been observed that physical education teachers often marginalize obese students by assigning them less significant tasks and easier exercises during physical education sessions. This practice of assigning alternative tasks can stigmatize obese students, and delegating a less important role within activities is perceived and reported by obese students as exclusion (Goffman, 1963; Li and Rukavina, 2012). Despite the intention to assist, physical education teachers inadvertently segregate these students.

We assume that obese students should be integrally included in physical activities and should not be relegated to less important roles. Exclusion from physical activities discourages overweight children from engaging actively (Li & Rukavina, 2012a). Research indicates that such exclusion contributes to reduced activity levels among these children (Nanselet al., 2001; Iannotti, & Nansel, 2009). These practices perpetuate the stereotype that "obese children are inactive and unmotivated," denying them the opportunity for active participation even if they wish to engage. It is imperative for physical education teachers to establish norms of equality and acceptance, providing all children with the chance to participate fully in physical activities (Rukavina & Li, 2008).

Creation of a stigmatizing environment:

In the analysis of interviews with obese students and physical education teachers, as well as in other studies, it is evident that physical education teachers often create an environment that fosters stigmatization through certain practices. Physical activities that emphasize social comparison tend to elicit negative comments about the physical performance and appearance of overweight or obese children (O'Connor & Graber, 2014). Activities that highlight body visibility and physical abilities in front of peers are particularly conducive to the stigmatization and discomfort of these students. Specifically, exercises such as fitness drills, running, jumps, and

facial supports have been identified as promoting social comparison (O'Connor & Graber, 2014; Van Amsterdam et al., 2012).

Physical education teachers must be cognizant of the impact of these activities. Such physical activities often lead to negative remarks about the physical performance and appearance of obese children, making them feel uncomfortable when compared to their peers. The visibility of performance to others is more stigmatizing than poor results themselves (Trout & Graber, 2009). Therefore, we recommend adapting exercises to reduce the visibility of obese or overweight students. For instance, during running activities, starting at different intervals can make the performance less conspicuous (Trout & Graber, 2009).

Evaluation practices that emphasize physical performance can further exacerbate social comparison and stigmatization. Evaluations focused solely on physical performance foster an environment where differences are displayed, which can undermine the student's enjoyment, development, and fulfilment. Irwin, Symons, and Kerr (2003) suggest the implementation of exercise stations during evaluations to allow students to be assessed without being observed by their peers.

The emphasis on comparing performances among students during evaluations can contribute to stigmatization. Crombie et al. (2011) recommend involving all children to avoid having spectators and regularly changing groups. Encouraging children to focus on their performance rather than comparing themselves to others is also crucial (Trout & Graber, 2009).

Additionally, using punishment for poor physical performance is particularly harmful and contributes to the victimization and discrimination against obese students. Such practices not only result in failure for the child but also subject them to punishment, which can lead to resentment from their peers. It is essential that physical education teachers understand that punishing children for their physical performance does not improve their performance and can cause further harm. No teacher should punish a child based on their physical performance (Trout & Graber, 2009).

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اتجاهات معلمي التربية الرياضية نحو الطلاب البدناء

الملخص:

السمنة هي قضية معقدة ومتعددة العوامل، وقد ازدادت معدلات انتشارها بشكل كبير في السنوات الأخيرة في هذا السياق، تطرح هذه الدراسة سؤالاً حول المواقف التي تتجلى في العمل التربوي للمعلم، والتي تساهم بشكل غير واعي في وصم الطالب البدين بدلاً من دمجهم. لذلك، نظمت الأسئلة المطروحة في المقابلات وفقاً للعناصر الموضوعية. لقد أتاح استخدام شبكة تستند إلى أسئلة مفتوحة إجراء مقابلات "مرنة"، مما سمح للمشاركين بالتعبير بحرية عن تجاربهم. تتكون المقابلات من ثلاث مقابلات مع الطلاب البدناء، وتسع مقابلات مع معلمي التربية البدنية، وثلاث مقابلات مع مفتشي التربية البدنية. تم تسجيل هذه المقابلات الخمسة عشر بموافقة مسبقة من المشاركين ثم تم تفرغها في ملاحق الدراسة. في الواقع، تسمح لنا النتائج الأبرز المسجلة في هذه الدراسة أن نقول بأن معلمي التربية البدنية الذين تمت مقابلتهم ليسوا على دراية بوصمهم للطلاب البدناء خلال حصص التربية البدنية. لقد ساهمت هذه الدراسة في فهم المواقف التي يتبناها معلمو التربية البدنية والرياضية والتي تعزز الوصم. نظرًا لأنهم الوحيدون الذين يقدمون فرصًا للأنشطة البدنية للأطفال من جميع الأعمار، فإن معلمي التربية البدنية هم الأكثر تعرضًا لزيادة نسبة الأطفال الذين يعانون من السمنة. لذا، من المهم جدًا تزويدهم بالأدوات والاستراتيجيات لتحديد مواقفهم من أجل مكافحة وصم الطلاب البدناء.

الكلمات المفتاحية: السمنة، الوصم، التربية البدنية.