

Peer Support in Sport Environments Scale: Validity and Reliability Study

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Abstract: This study aimed to develop a valid and reliable scale to evaluate the perception of peer support in the sport environments of students competing in school sports. The scale development process comprised literature review, item pooling, expert opinion, pilot application and psychometric analyses. Data were gathered from 494 students for exploratory factor analysis (EFA) and 419 students for confirmatory factor analysis (CFA). The EFA revealed that the scale had a single-factor structure and explained 47.6% of the total variance. CFA analyses supported the construct validity of the scale, and the fit indices of the model were acceptable ($\chi^2/df = 2.19$, RMSEA = 0.0532, CFI = 0.981, TLI = 0.974, SRMR = 0.0272). In addition, a two-factor alternative model was also tested; however, it was not preferred because the fit indices were significantly lower than the one-factor model ($\Delta CFI > .01$; $\Delta RMSEA > .015$). As a result of internal consistency analyses, Cronbach's alpha coefficient was calculated as 0.872 and McDonald's Omega coefficient as 0.874. In conclusion, this one-dimensional, 8-item scale was validated as a valid and reliable measurement tool for assessing peer support perceived by students competing in school sports in sport environments. It is recommended to examine the validity of the scale in different age groups, sport types and cultural contexts in further studies.

Key words: School sports, peer support, sport environments, scale development

Spor Ortamlarında Akran Desteği Ölçeği: Geçerlik ve Güvenilirlik Çalışması

Öz: Bu çalışmada, okul sporlarında mücadele eden öğrencilerin spor ortamlarında akran desteğini algılamalarını değerlendirmek amacıyla geçerli ve güvenilir bir ölçek geliştirilmesi hedeflenmiştir. Bu çalışmada ölçek geliştirme adımları olarak; kapsamlı bir literatür taramasının ardından madde havuzunun oluşturulması, uzman değerlendirmelerinin alınması, ön uygulamanın gerçekleştirilmesi ve psikometrik özelliklerin test edilmesi süreçleri izlenmiştir. Açımlayıcı Faktör Analizi (AFA) için 494 öğrenciden, Doğrulayıcı Faktör Analizi (DFA) için ise 419 öğrenciden veri toplanmıştır. AFA sonuçları, ölçeğin tek faktörlü bir yapıya sahip olduğunu ve toplam varyansın %47.6'sını açıkladığını göstermiştir. DFA analizleri, ölçeğin yapı geçerliliğini desteklemiş ve modelin uyum indeksleri kabul edilebilir düzeyde bulunmuştur ($\chi^2/sd = 2.19$, RMSEA = 0.0532, CFI = 0.981, TLI = 0.974, SRMR = 0.0272). Ayrıca, iki faktörlü alternatif model de test edilmiş; ancak uyum indeksleri tek faktörlü modele göre anlamlı şekilde daha düşük olduğu için tercih edilmemiştir ($\Delta CFI > .01$; $\Delta RMSEA > .015$). İç tutarlılık analizleri sonucunda Cronbach Alpha katsayısı 0.872, McDonald's Omega katsayısı ise 0.874 olarak hesaplanmıştır. Sonuç olarak, tek boyutlu, 8 maddeden oluşan bu ölçek; okul sporlarında mücadele eden öğrencilerin spor ortamlarında algıladıkları akran desteğini değerlendirmede geçerli ve güvenilir bir ölçme aracı olarak doğrulanmıştır. Bundan sonra yapılacak çalışmalar için ölçeğin farklı yaş gruplarında, spor türlerinde ve kültürel bağlamlarda geçerliliğinin incelenmesi önerilmektedir.

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Anahtar kelimeler: Okul sporları, akran desteği, spor ortamları, ölçek geliştirme

Introduction

Social support within sport environments is a critical factor that enhances the athletes' physical performance and their psychological resilience and social cohesion (Freeman, 2020). Peer support, a subtype of social support, defines a reciprocal process in which individuals with similar experiences come together under equal conditions and support one another emotionally, informatively and directly. Unlike general social support, it exhibits a non-hierarchical structure based on mutual experience sharing (Mead et al., 2001). Peer support operates as an interaction system based on mutual empathy and enables individuals to make sense of the difficulties they experience together. This form of support fosters psychological relief, social validation and a sense of belonging by creating mutual empowerment between the parties receiving and providing support (Mead et al., 2001; Penney, 2018). Especially for students who are actively involved in school sports, peer support may enhance performance by alleviating stress and fatigue (Davis & Cohen, 2018). It also stands out as an effective form of social interaction that strengthens interpersonal solidarity and supports team dynamics (Burns et al., 2019; Harrison et al., 2021). In this context, peer support, as an important social factor affecting athletes' motivation and sports performance (Zainuddin et al., 2023), is a valuable resource for individual and collective well-being, especially for students competing in school sports.

Research shows that peer relationships in sport settings contribute to positive outcomes on intrinsic motivation and performance by influencing individuals' perception of motivational climate (Jõesaar et al, 2012). A peer-initiated task-orientated motivational climate has been found to increase athletes' well-being and strengthen their intention to stay within the team (McLaren et al., 2024). In addition, it is stated that task-oriented peer motivational climate encourages solidarity and cooperation (Isoard-Gauthier et al., 2022). In addition, Horn et al. (2012) emphasise that a task-oriented motivational climate is an important factor in increasing team cohesion and supports individuals to achieve both individual and group goals. In this context, the scale developed in our study aims to measure these positive effects of peer support in sport environments and to provide a better understanding of this concept.

A review of the literature reveals a variety of measurement tools developed across different fields to assess social support or adapted to Turkish (Duru, 2007; Eker et al., 2001; Yıldırım, 1997, 2004; Zimet et al., 1988). Given the pivotal role of social support in individuals' psychological and social well-being, instruments assessing this construct yield valuable insights across contexts. For example, a scale developed by Kuo et al. (2007) and adapted into Turkish by Çalışkan and Çınar (2012) aims to assess nursing students' levels of cooperation and collaboration with their peers. However, it is seen that such scales do not adequately reflect sport-specific social support dynamics.

Measurement tools developed to assess social support in the sport context have provided an important basis for understanding the effects of this dynamic on athletes. For example, the 'Perceived Available Support in Sport Questionnaire (PASS-Q)' developed by Freeman et al. (2011) focused on assessing four basic dimensions of social support (emotional support, esteem support, informational support, and tangible support). This scale is presented as a comprehensive tool for understanding the effects of social support in sport psychology research by measuring the level of support athletes perceive when they need it. However, this scale focuses only on the perceived general level of support and does not address the interactional, reciprocal and dynamic

aspects of peer support in depth. Similarly, the ‘Team-referent Availability of Social Support Questionnaire (TASS-Q)’ developed by Coffee et al. (2017) was designed to assess perceived social support in team sports. This scale, which specifically aims to understand the effect of social support on team dynamics, was adapted for Turkish athletes by Şenel et al. (2018) and adapted to the local context. This scale also focuses on measuring the perception of general social support at the team level; it does not address the psychosocial and performance-oriented dimensions of individual peer support in detail.

The ‘Coach-based Supportive and Restrictive Motivational Climate Scale’ (Appleton et al., 2016), which was developed to examine the social support perceived by athletes only from their coaches, was adapted into Turkish by Elmas and colleagues (2018). This scale evaluates the effects of coaches on motivational climate in a multidimensional way in the sport environment and deals with supportive and restrictive motivational climate in separate dimensions. This scale, which offers the opportunity to examine in detail the social support and control that athletes perceive from their coaches, has an important place in the literature. However, this scale only addresses the perception of coach-induced support in a multidimensional way; it does not include peer-to-peer social support relationships and the effects of this support on athlete motivation, confidence and performance. Developed by Burke et al. (2024) and adapted into Turkish by Görgülü et al. (2024), the The development and validation of the Youth Sport Parental Support-Questionnaire (YSPS-Q) was designed to assess the social support perceived by young athletes from their parents. The scale measures athletes' perceptions of parental support in four different dimensions: emotional support, information support, autonomy support and instrumental support. The YSPS-Q provides a comprehensive tool for examining the effects of parental support on sport performance and psychosocial well-being of young athletes. However, this scale only measures parental social support and does not include constructs specific to the sport context, including interactional and psychosocial aspects of peer support.

The ‘Social Support in Physical Activities Scale (SSPAS)’ developed by Farias Junior et al. (2014) and adapted into Turkish by Küçükibiş and Eskiler (2019) was designed to measure social support levels in the context of participation in physical activities. The scale consists of two main sub-dimensions, ‘parental support’ and ‘peer support,’ and each sub-dimension consists of 5 items. However, the peer support dimension of the SSAS does not fully reflect the specific dynamics of sport environments. For example, this scale does not cover elements, such as increasing self-confidence, motivation, performance improvement and safety of athletes. Peer support in sport settings is a concept that needs to be addressed not only at a general level but also with individual and group dynamics specific to the sporting context (Evans et al., 2012).

In the existing literature, the lack of a scale that comprehensively addresses the effects of peer support in sport environments on athletes' individual and team performances draws attention. For example, although the aforementioned measurement tools cover general social support dimensions, they do not adequately address individual and group dynamics specific to the sporting context. This deficiency reveals the need for more specific measurement of key elements, such as motivation, self-confidence, and performance in athletes. The Peer Support in Sport Environments Scale developed in this study was designed to measure the perception of peer support specific to the sport environment. The scale assesses the support perceived by athletes from their peers in dimensions specific to the sport context, such as emotional support, performance enhancement, motivation enhancement, and safety. The fact that the existing measurement tools in the literature do not adequately address this specific context necessitated the development of this scale. In

parallel, the findings obtained from the factor analyses revealed that the developed scale exhibited a unidimensional structure. This is not a preference based on the researcher's presupposition, but a result of the natural structure of the data. In sport environments, peer support is perceived as intertwined with emotional, motivational and functional aspects and is often experienced as a holistic experience without being separated (Bianco & Eklund, 2001; Rees & Hardy, 2000). In addition, the fact that interpersonal relationships in Turkish culture are perceived as based on closeness, belonging and reciprocity supports this integrated structure of peer support (Kağıtçıbaşı, 2005, 2011). In this context, the scale developed in this study is both unique in terms of measurement structure. It makes a meaningful contribution to national and international research by bringing the forms of social interaction specific to the Turkish sample into the literature. This study was conducted on middle and high school students actively participating in school sports. The reason for choosing this age group is that adolescence is the stage in which social identity development and peer relations are most intense (Steinberg, 2005). The aim of this study is to develop a valid and reliable measurement tool that can assess peer support on individual performance development, self-confidence enhancement, motivation enhancement and safety perceptions of students competing in school sports.

Methods

Research Design

This research is a scale development study conducted by adopting a quantitative research approach and structured within the scope of a descriptive survey model. The primary aim is to develop a valid and reliable measurement tool to assess how students competing in school sports perceive peer support in the sport environments. In this context, the research process is based on a comprehensive scale development procedure that aims to create a structure appropriate to the theoretical foundations of the concept to be measured and to ensure that this structure is represented by a valid measurement tool (DeVellis & Thorpe, 2021; Worthington & Whittaker, 2006).

Scale Development Process

The scale development process, as suggested by Boateng et al. (2018), consisted of determining the theoretical framework, creating an item pool, obtaining expert opinion, conducting a pilot study, and conducting validity and reliability analyses. In addition, the appropriateness and applicability of the measurement tool to the target group were also considered in the evaluation process. In this context, not only the psychometric properties but also the ease of use of the scale and its compatibility with the measurement purpose were considered (Hinkin, 1998).

The applications in the study were carried out in accordance with the international assessment and evaluation standards recommended by AERA, APA and NCME (2014). In the scale development process, Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) techniques were used to analyze the data. All these processes were systematically planned and carried out to produce a valid and reliable structure.

Research Group

This scale development study was conducted with two different study groups. Participants were selected by a convenience sampling method, which is one of the non-probability sampling types, in accordance with the research objectives. In scale development studies, sample size is a critical factor that directly affects the accuracy of validity and reliability analyses (Boateng et al.,

2018). There are different approaches to sample size. According to a guideline proposed by Comrey and Lee (1992), 50 people is considered a very poor sample size, 100 people is considered poor, 200 people is considered average, 300 people is considered good, 500 people is considered very good, and 1000 people is considered an excellent sample size. MacCallum et al. (1999) stated that in factor analyses, a sample size of at least 5 to 10 times the scale items is necessary for reliable results. In the light of this information, data were collected from 494 people for Exploratory Factor Analysis (EFA) and 419 people for Confirmatory Factor Analysis (CFA), which are well above the minimum limits recommended in the literature.

The first study group comprised secondary and high school students in Ankara, İstanbul, Bartın, Diyarbakır, and Van for the Exploratory Factor Analysis (EFA). The participants were selected among students also involved in a sports team. A total of 494 students were included in this group; 41.1% were female ($n = 203$) and 58.9% were male ($n = 291$). The distribution according to grade levels was as follows: 5th grade ($n = 45$, 9.1%), 6th grade ($n = 91$, 18.4%), 7th grade ($n = 73$, 14.8%), 8th grade ($n = 95$, 19.2%), 9th grade ($n = 83$, 16.8%), 10th grade ($n = 51$, 10.3%), 11th grade ($n = 20$, 4.0%), and 12th grade ($n = 36$, 7.3%). Regarding the sports branches, 53.0% of the participants were involved in football ($n = 262$), 18.6% in volleyball ($n = 92$), 5.9% in basketball ($n = 29$), and 22.5% in other branches ($n = 111$) (see Table 1).

The second study group consisted of secondary and high school students from the same regions for the Confirmatory Factor Analysis (CFA). In this group, 419 students were included: 42.5% were female ($n = 178$) and 57.5% were male ($n = 241$). The distribution according to grade levels was as follows: 5th grade ($n = 41$, 9.8%), 6th grade ($n = 74$, 17.7%), 7th grade ($n = 71$, 16.9%), 8th grade ($n = 69$, 16.5%), 9th grade ($n = 75$, 17.9%), 10th grade ($n = 39$, 9.3%), 11th grade ($n = 22$, 5.3%), and 12th grade ($n = 28$, 6.7%). Regarding the sports branches, 49.9% of the participants were involved in football ($n = 209$), 17.4% in volleyball ($n = 73$), 7.4% in basketball ($n = 31$), and 25.3% in other branches ($n = 106$) (see Table 1).

The data collection process was carried out after obtaining the relevant ethics committee permission (Dicle University Social and Human Sciences Ethics Committee, decision dated 10.12.2024 and numbered 826349). Participants were included in this study on a voluntary basis, written informed consent was obtained from the parents of the students, and data were collected in accordance with the principles of confidentiality. This application was conducted as required by ethical standards in research with human participants (APA, 2017). Convenience sampling and criterion sampling methods were used in this study. While convenience sampling was used to increase data accessibility, criterion sampling was used to consider the criterion of being actively involved in sports teams (Patton, 2002). Data collection was carried out by the face-to-face questionnaire method from middle and high school students in the study provinces. During the application, the questionnaire form was distributed to the students individually, the purpose of the research was explained and the forms were collected in about 10-15 minutes.

Table 1

Sociodemographic characteristics of EFA and CFA samples

| Variable | Category | EFA | EFA | CFA | CFA |
|----------|----------|----------|------|----------|------|
| | | <i>n</i> | % | <i>n</i> | % |
| Gender | Female | 203 | 41.1 | 178 | 42.5 |
| | Male | 291 | 58.9 | 241 | 57.5 |

| | | | | | |
|--------|----------------|-----|-------|-----|-------|
| Branch | Football | 262 | 53.0 | 209 | 49.9 |
| | Volleyball | 92 | 18.6 | 73 | 17.4 |
| | Basketball | 29 | 5.9 | 31 | 7.4 |
| | Other Branches | 111 | 22.5 | 106 | 25.3 |
| Grade | 5th Grade | 45 | 9.1 | 41 | 9.8 |
| | 6th Grade | 91 | 18.4 | 74 | 17.7 |
| | 7th Grade | 73 | 14.8 | 71 | 16.9 |
| | 8th Grade | 95 | 19.2 | 69 | 16.5 |
| | 9th Grade | 83 | 16.8 | 75 | 17.9 |
| | 10th Grade | 51 | 10.3 | 39 | 9.3 |
| | 11th Grade | 20 | 4.0 | 22 | 5.3 |
| | 12th Grade | 36 | 7.3 | 28 | 6.7 |
| Total | | 494 | 100.0 | 419 | 100.0 |

Determining the Need for Measurement

This study aimed to develop an original measurement tool to assess peer support in sport environments. It was determined that the existing scales in the literature were not sufficiently inclusive and appropriate for measuring peer support in sport environments among middle and high school students actively participating in team sports (Chiu et al., 2016; Jöesaar et al., 2011; Reimers et al., 2012).

The primary purpose of this study is to develop a theoretically and practically valid measurement tool for measuring peer support in sport teams. Accordingly, a 16-item draft scale including general statements about peer support in sport teams was prepared. The items were structured to enable participants to evaluate their experiences of peer support in the context of motivation, safety, moral support and cooperation.

In this study, creating a 16-item item pool was a conscious choice. There are two main reasons for this choice: First, when the literature is examined, it is seen that peer support in sport settings is generally evaluated through four basic dimensions: motivation, safety, moral support and cooperation. Based on these four dimensions, an item structure was created to represent each of them in a way that would reach contextual satisfaction. Secondly, the target group of the scale consists of adolescent students between the ages of 10-17. Considering the attention span and cognitive load of this age group, the scale was structured in a short, clear and understandable way.

Literature Review and Conceptual Framework

In the first stage of the scale development process, national and international literature focusing on social support and peer relationships in sport environments was reviewed. In the literature review, key concepts, such as 'peer support in sports' and 'social support in sports,' were examined. Studies emphasising the effects of social support on individual performance, safety and motivation provided the theoretical basis for this process (Cohen & Wills, 1985; Rees & Hardy, 2000).

Accordingly, the scale was based on four main theoretical frameworks. First, Stress-coping Theory (Cohen & Wills, 1985) draws attention to the importance of peer support in coping with performance pressure in athletes, arguing that social support acts as a buffer that reduces the negative effects of stress. Secondly, Self-determination Theory (Deci & Ryan, 2000) states that when individuals' motivational needs (relatedness, competence and autonomy) are supported by the social environment, intrinsic motivation and psychological well-being increase. Peer support contributes to meeting these needs, especially in the sporting context. Thirdly, Perceived Social Support Theory (Sarason et al., 1990) focuses on how an individual perceives support; it is based on subjective perception and experience rather than the objective existence of support. In this context, the scale items were structured to reflect the athletes' perceptions of peer support. Finally, the Peer Support Theoretical Approach (Mead et al., 2001) considers this type of support as a non-hierarchical process based on mutual empathy, equal relationships and experience sharing. It shapes the content of the scale in this respect.

Creation of Measurement Items

In line with the information obtained from the literature review, a comprehensive item pool was created for peer support in sport environments. This pool consists of general statements evaluating athletes' experiences of peer support. For example, statements, such as 'The supportive words of my friends in sport environments increase my motivation' and 'We cheer each other up after bad competitions' were designed to reflect the experiences of the athletes. The first draft consists of 16 items in total, and each item is designed to cover different types of support in sport environments.

Determination of Scaling Method

In the evaluation of the items in the scale, a 5-point Likert-type rating was preferred. Participants responded to each item by giving a score between "Strongly Disagree" (1) and "Strongly Agree" (5). The reason why a 5-point scale was preferred in the study is that it is a more understandable and applicable format for young participants (middle and high school students). In addition, 5-point Likert-type scales are frequently preferred in the literature to provide sufficient variance in data analysis and enable respondents to make evaluations without excessive option fatigue.

Expert Feedback and Revision

The draft scale was presented to 5 experts who are specialised in the fields of sport sciences, psychology and measurement-evaluation and have publications and experience in these fields. The experts gave their opinions on a form to evaluate the items as 'appropriate,' 'should be corrected,' and 'should be removed'. In line with the feedback from the experts, minor adjustments were made to some items in terms of grammar and meaning. For example, one item was restructured to make it more straightforward. However, no item was removed from the scale in this process. With these arrangements, the comprehensibility of the scale was increased and its content validity was supported in the light of the literature (Davis, 1992; Lawshe, 1975).

Data Analyses

In this study, the data collected during the process of developing the peer support in sport environments scale were examined in detail before starting the analyses. To analyse the data in a reliable and valid way, missing values and outliers were first checked in the dataset. Forms with 5% or more missing data were excluded from the analysis (Taylor, 2022). To determine outliers,

raw scores were converted into z scores and values within ± 4 were used in the analysis (Stevens, 2009). In addition, Mahalanobis distances were calculated to detect multivariate outliers. Whether the data were normally distributed was evaluated by examining the arithmetic mean, mode, median values, skewness and kurtosis coefficients, histogram graphs and Q-Q graphs. Data that met the assumptions of normal distribution were accepted as suitable for analysis.

Exploratory Factor Analysis (EFA) was conducted using JAMOVİ statistical software. At this stage, the suitability of the data for factor analysis was evaluated by Kaiser-Meyer-Olkin (KMO) test and Bartlett's Sphericity Test. According to the EFA results, the factor structure of the scale was determined. Confirmatory Factor Analysis (CFA) was conducted with JAMOVİ software and aimed to confirm the factor structure determined by EFA. In CFA, goodness of fit indices (RMSEA, NFI, GFI, CFI, AGFI, IFI) were analysed. In addition, Cronbach's alpha coefficients were calculated for the reliability analysis of the scale.

Results

Research Question: Does peer support perceived by students competing in school sports exhibit a unidimensional structure?

Hypothesis: The unidimensional structure of the scale will be confirmed by EFA and CFA

Evaluation / Analysis of the Scale

For validity and reliability analyses, firstly, the accuracy of the dataset was examined in detail. In this context, descriptive statistics (arithmetic mean, median, mode, skewness and kurtosis coefficients, etc.) were used to evaluate whether the data points were within the possible limits (1-5 range). Missing data were identified, and participants who filled out the scale items incompletely were excluded from the analysis. To detect outliers, raw scores were converted into Z scores and the Z score range was determined as ± 4 considering the large sample size ($n > 100$) (Osborne & Overbay, 2019).

Whether the data showed a normal distribution, whether the arithmetic mean, median and mode values were close to each other, and whether the skewness and kurtosis coefficients were in the range of -2 and +2 were evaluated by visual examinations, such as histograms and Q-Q graphs. It was observed that the skewness values varied between -1.47 and -0.703, and the kurtosis values varied between 1.94 and -0.405. According to Mallery and George (2000), the skewness and kurtosis coefficients between -2 and +2 may indicate that the data are suitable for normal distribution. After the outliers were identified, the data of 17 participants were excluded from the analysis, and the analyses were conducted on the data of 457 participants who did not contain outliers. However, the large sample size ($n = 457$) supports the validity of parametric analyses.

In this study, the suitability of the dataset for factor analysis was evaluated by the Kaiser-Meyer-Olkin (KMO) test and Bartlett Sphericity Test. The overall KMO value was calculated as 0.952, and determined that the sample was 'perfectly' suitable for factor analysis (Tabachnick & Fidell, 2015). The results of Bartlett's Test of Sphericity ($\chi^2 = 3371$, $df = 120$, $p < 0.001$) showed that the scale items were suitable for the factor analysis. The Maximum Likelihood (ML) method was chosen to determine the factor structure, as it provides more accurate and reliable results when the data meet the assumption of normal distribution. Although multivariate normality was not tested directly (e.g., via Mardia's test), univariate skewness and kurtosis values were within the acceptable range (± 1.5), and visual inspections (e.g., histogram and Q-Q plots) supported

normality. Given the large sample size ($n = 457$), using ML estimation was considered appropriate (Kline, 2016; Tabachnick & Fidell, 2015).

Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) was conducted to test the construct validity of the scale developed to assess peer support in sport environments. In the factor analysis, Maximum Likelihood (ML) was used as the estimation method. In the first stage, the eigenvalue criterion and Scree Plot graph were evaluated together to decide the number of factors. A single factor with an eigenvalue above 1 was identified and the break point in the Scree plot supported this structure.

A total of eight items (items 1, 2, 3, 7, 8, 9, 14 and 16) were excluded from the analysis based on factor loadings, content relevance and cross-loading. The value of .40 was taken as the lower limit of the item factor loadings; items below .40 and cross-loaded items with significant loadings on more than one factor were excluded from the scale. After these procedures, the analyses were repeated and a unidimensional structure consisting of 8 items was obtained. The factor loadings of the remaining items ranged from .634 to .748.

This structure supports both content validity and structural consistency of the scale. In addition, when the Scree plot is analyzed, it is seen that the eigenvalue of the first factor is close to 4 and explains 47.6% of the total variance. The other factors do not contribute significantly. These findings indicate that the scale has a strong and consistent single-factor structure.

Figure 1.

Scree plot

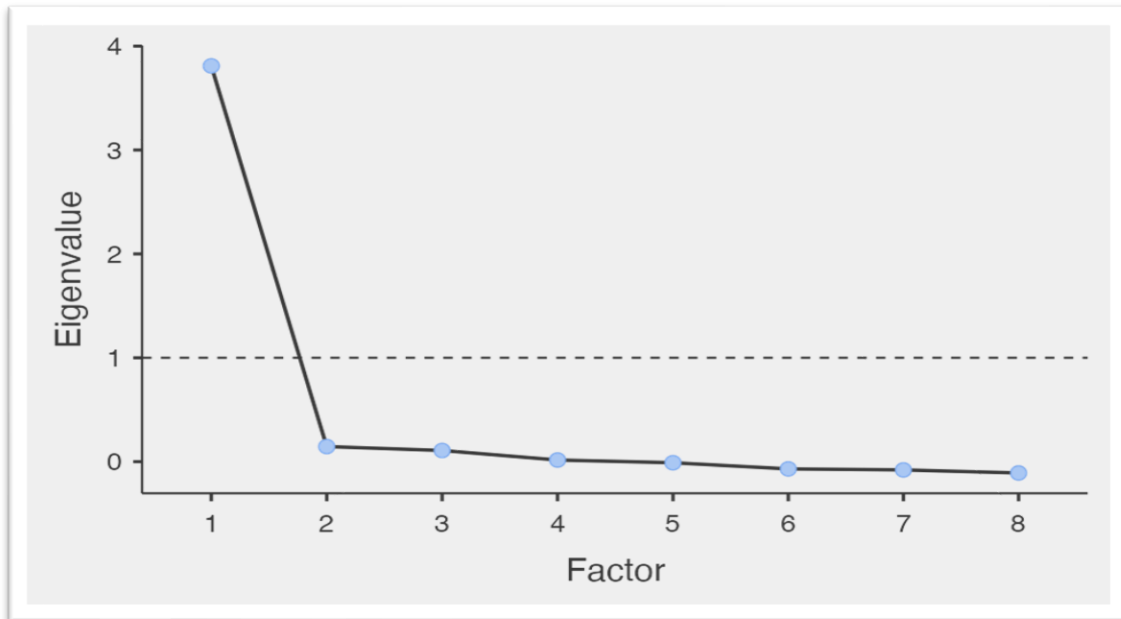


Table 2

Exploratory factor analysis results of peer support in sport environments scale

| Item Number | Scale Items | Factor Load Value | Item Total Correlation |
|-----------------------------------|--|-------------------|------------------------|
| I4 | My teammates console me when I fail. | .689 | .640 |
| I5 | My teammates do not judge me when I perform badly. | .634 | .592 |
| I6 | My teammates help me find solutions when I have difficulties. | .743 | .694 |
| I10 | My friends motivate me to perform better in sport environments. | .715 | .661 |
| I11 | The support of my friends in sport environments increases my self-confidence. | .651 | .600 |
| I12 | My friends encourage me to express myself well in sport environments. | .748 | .694 |
| I13 | My friends give me constructive feedback to improve my performance. | .693 | .645 |
| I15 | My friends give necessary warnings to ensure my safety during sports (e.g., use of equipment, and appropriate warm-ups). | .637 | .592 |
| KMO | .920 | | |
| Bartlett's Test of Sphericity (p) | <.001 | | |
| Eigenvalue | 3.81 | | |
| Total Variance Explained | 47.6% | | |
| Cronbach's α | .877 | | |

Item-total correlations ranged from 0.45 to 0.70, and each item was adequately related to the scale (Nunnally & Bernstein, 1994).

Confirmatory factor analysis

Based on the Exploratory Factor Analysis (EFA) results, Confirmatory Factor Analysis (CFA) was conducted to verify the scale consisting of a single dimension and 8 items. The CFA was applied using the Maximum Likelihood (ML) method to test the fit of the data with the specified model. The normal distribution of the data was confirmed by finding skewness and kurtosis values between +1.5 and -1.5 (Tabachnick & Fidell, 2015). Commonly used fit indices, such as Chi-square (χ^2), Chi-square/degrees of freedom (χ^2/df), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI), were considered in the goodness-of-fit evaluation of the model (Kline, 2016).

Table 3

Fit indices and reference values

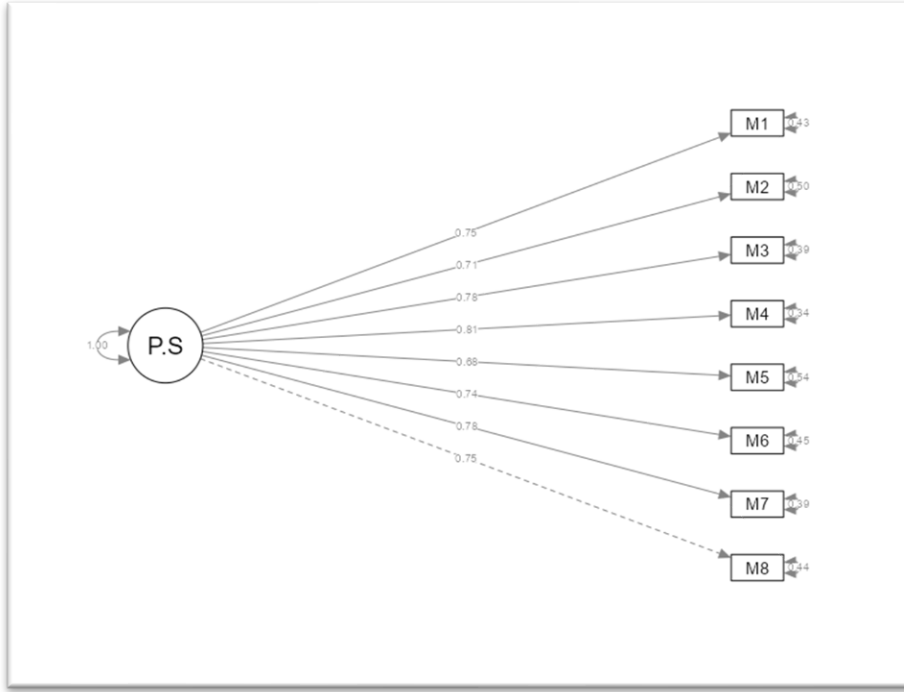
| | Fit Indices | Excellent Values | Acceptable Values | Scale Values |
|--|-------------|---------------------------|-------------------|--------------|
| Peer Support in Sport Environments Scale | χ^2/df | $0 \leq \chi^2/df \leq 2$ | ≤ 5 | 2.19 |
| | RMSEA | $0 \leq RMSEA \leq 0.05$ | $RMSEA \leq 0.08$ | 0.05 |
| | SRMR | <0.05 | <0.08 | 0.02 |
| | CFI | >0.95 | >0.90 | 0.981 |
| | TLI | >0.95 | >0.90 | 0.974 |
| | GFI | > 0.95 | > 0.90 | 0.952 |
| | AGFI | > 0.90 | > 0.85 | 0.928 |
| | IFI | > 0.95 | > 0.90 | 0.980 |

Source: Hu & Bentler, 1999; Kline, 2016; Marsh et. al., 2004; Tabachnick & Fidell, 2015.

It shows that the unidimensional structure of the scale is at a sufficient level in terms of goodness of fit. The χ^2/df value was calculated as 2.19 and this value was close to the perfect fit criterion. The fit indices CFI = 0.981 and TLI = 0.974 both meet the perfect fit criteria and support the fact that the model has a strong structure. RMSEA = 0.0532 and confidence interval (0.0315–0.0747) are within acceptable limits and reinforce the explanatory power of the model. In addition, SRMR = 0.0272 is within the limits of perfect fit, indicating that the measurement model provides a high level of fit with the data. Furthermore, additional indices, such as GFI = 0.952, AGFI = 0.928, and IFI = 0.980, also fall within the excellent fit range, supporting the overall adequacy of the unidimensional model.

Figure 2.

Path diagram and standardised values of peer support in Sport Environments Scale



As illustrated in Figure 2, the standardised coefficients showing the relationship of the items with the latent factor ranged from 0.68 to 0.81. These values show that the items demonstrate a sufficient level of relationship with the factor.

Final Evaluation and Finalisation of the Scale

In the confirmatory sample ($n = 419$), when the reliability coefficients of the scale were analysed, Cronbach's alpha value was calculated as 0.872 and McDonald's Omega value as 0.874. These values reflect that the scale shows a high level of internal consistency and the relationship between the items is strong. In addition, Average Variance Extraction (AVE) and Composite Reliability (CR) analyses were conducted to evaluate construct validity. AVE value was calculated as 0.564, which showed that the scale could explain more than 50% of the total variance. The CR value was 0.912, indicating that the measurement structure of the scale is highly reliable. AVE of 0.50 and above and CR of 0.70 and above are considered the basic criteria supporting the construct validity of a measurement tool (Cheung et al., 2024).

Discussion and Conclusion

As our findings indicate, the unidimensional structure of the developed scale reveals that peer support works in an integrated manner with team dynamics, as emphasized by researchers, such as Freeman (2020) and McLaren (2024). This suggests that the peer support scale is an effective social factor at both individual and group levels.

School sports are considered an important field that increases students' social interactions as well as supporting their physical development. Especially in sport environments, in addition to the physical performance of individuals, psychological resilience and team dynamics are also shaped through peer relationships (Freeman, 2020; Harrison et al., 2021). It is stated that factors,

such as team solidarity, motivation, moral support, and perception of safety, can directly affect the individual and collective performances of athletes (McLaren et al., 2024; Isoard-Gauthier et al., 2022). Therefore, it was aimed to develop a valid and reliable measurement tool to assess how students competing in school sports perceive peer support in sport environments.

Based on data analyses from two different groups in this study, an 8-item and one-dimensional measurement tool was developed. This unidimensional structure is consistent with the fact that emotional, motivational and functional dimensions of peer support are experienced holistically in the sport environment without being separated from each other. This is in line with the findings emphasized by Bianco and Eklund (2001) and Rees and Hardy (2000), who stated that peer support is within sport settings as a structure that is interwoven with mutual interactions and challenging to separate. Thus, the single-factor structure of the developed scale is consistent with both the statistical analysis results and the theoretical approaches to peer support.

The data obtained from the scale show that it reflects the dynamics specific to sport environments in more detail when compared to the scales previously developed in the context of social support and sport environment. For example, the general social support scales used by Zimet et al. (1988) and Duru (2007) do not directly address interactions specific to the sport environment. Similarly, the scale developed by Kuo et al. (2007) with nursing students and adapted into Turkish by Çalışkan and Çınar (2012) assessed peer support only in the dimension of academic cooperation. The PASS-Q (Freeman et al., 2011) and TASS-Q (Coffee et al., 2017), developed specifically for the sport environment, measure general aspects of social support but exclude specific components, such as peer-to-peer dynamics, mutual support and psychosocial interactions. In particular, the SSPAS (Farias Junior et al., 2014), although it includes peer support, is limited in that it does not focus on critical athlete needs, such as increasing self-confidence and improving performance. In this context, the Peer Support in Sport Environments Scale (PSASES), which was developed in this context, offers a comprehensive assessment at both interactional and psychosocial levels by addressing dimensions, such as emotional support, motivation, performance contribution and perception of safety in a single integrity.

The total variance explained by the scale was 47.6%. The fit indices of the scale were $\chi^2/sd = 2.19$, RMSEA = 0.0532, SRMR = 0.0272, CFI = 0.981 and TLI = 0.974. The factor loadings of the scale items ranged between 0.634 and 0.748. As a result of the reliability analysis, Cronbach's alpha value was calculated as 0.872 and McDonald's Omega value as 0.874. These results indicate that it is a valid and reliable data collection tool for evaluating peer support in sport environments for students competing in school sports.

In this context, the developed Peer Support in Sport Environments Scale (PSSSES) is recommended as a valid and reliable measurement tool that can be used to assess peer support of students competing in school sports. The fact that the scale addresses the dynamics of social support specific to sport environments allows for a more comprehensive examination of peer relationships in the context of physical education and sport.

In addition, this scale makes an important contribution to the literature as one of the first Turkish instruments to comprehensively address the psychosocial dimensions of peer support in sport settings. In practice, it can be used as a functional assessment tool by physical education teachers, coaches and school counselors to determine students' perceptions of peer support.

Limitations and Suggestions

This assessment was conducted only in public schools in Türkiye; therefore, the findings cannot be generalized to other cultural contexts. The instrument was administered only in a specific age group, with athletes in a school setting and the Turkish context; therefore, its validity for different age groups, non-school sport groups and international samples remains untested.

The developed scale can be used by physical education teachers, school psychological counselors, and sports club coaches as a functional assessment tool to monitor students' perceived levels of peer support in sports settings and to develop social intervention programs when necessary.

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Geniş Özet

Giriş

Spor ortamlarında sosyal destek, yalnızca sporcuların fiziksel performansını değil, aynı zamanda psikolojik dayanıklılığını ve sosyal uyumunu artıran kritik bir unsurdur (Freeman, 2020). Sosyal desteğin bir alt türü olan akran desteği, benzer deneyimlere sahip bireylerin eşit şartlarda bir araya gelerek birbirlerine duygusal, bilgilendirici ve doğrudan yardım ettikleri karşılıklı bir süreci tanımlar. Bu yönüyle, genel sosyal destekten farklı olarak, hiyerarşik olmayan ve karşılıklı deneyim paylaşımına dayanan bir yapı sergiler (Mead et al., 2001). Akran desteği, karşılıklı empatiye dayanan ve bireylerin yaşadıkları zorlukları birlikte anlamlandırmalarını sağlayan bir etkileşim sistemidir. Bu destek biçimi, destek alan ve sunan taraflar arasında karşılıklı güçlenme yaratarak psikolojik rahatlama, sosyal onaylama ve aidiyet hissi sağlar (Darby Penney, 2018; Mead et al., 2001). Özellikle okul sporlarında aktif olarak yer alan öğrenciler için akran desteği, stres ve yorgunluk hissini azaltarak bireylerin performanslarını geliştirmelerine katkı sunabilir (Davis & Cohen, 2018). Ayrıca bu destek, takım içi dayanışmayı artıran ve pozitif sosyal etkileşim ortamı

oluşturan önemli bir unsur olarak değerlendirilmektedir (Burns et al., 2019; Harrison et al., 2021). Literatürde, spor ortamlarında görev yönelimli akran ilişkilerinin, bireylerin motivasyonel iklim algılarını etkileyerek takım bağlılığı ve içsel motivasyon üzerinde olumlu etkiler yarattığı belirtilmektedir (Isoard-Gauthier et al., 2022; McLaren et al., 2024). Bu bağlamda, akran desteği; sporcuların motivasyonunu ve spor performansını etkileyen önemli bir sosyal faktör olarak (Zainuddin et al., 2023), özellikle okul sporlarında mücadele eden öğrenciler için bireysel ve kolektif refah açısından değerli bir kaynak niteliğindedir.

Bu çalışmanın amacı, okul sporlarında mücadele eden öğrencilerin spor ortamlarında akran desteğini nasıl algıladıklarını değerlendirmek üzere geçerli ve güvenilir bir ölçme aracı geliştirmektir. Mevcut literatür incelendiğinde, sosyal destek ve akran ilişkilerine yönelik çeşitli ölçeklerin geliştirildiği görülmektedir (Freeman et al., 2011; Kuo et al., 2007; Zimet et al., 1988). Ancak bu ölçeklerin önemli bir bölümü spor bağlamına özgü yapısal farklılıkları yeterince yansıtmamakta; özellikle okul sporlarında aktif olan öğrencilerin karşılaştıkları özgül psikososyal süreçleri kapsamlı biçimde ele alamamaktadır. Spor ortamlarında yaşanan performans baskısı, takım içi etkileşimler, özgüven kazanımı ve güvenlik gibi unsurlar, spora özgü sosyal destek ihtiyacının daha özgül boyutlarla ele alınmasını gerekli kılmaktadır (Burke et al., 2024; Farias Junior et al., 2014). Bu bağlamda geliştirilen mevcut araçların çoğu antrenör veya ebeveyn kaynaklı desteğe odaklanmakta ya da yalnızca genel sosyal destek boyutlarını kapsamaktadır. Oysa akran desteği, özellikle ergenlik dönemindeki sporcular açısından motivasyon, duygusal dayanıklılık ve sosyal aidiyet gibi çok boyutlu etkilere sahiptir (Isoard-Gauthier et al., 2022; McLaren et al., 2024). Bu nedenle, okul sporlarında mücadele eden öğrencilerin spor ortamlarında akran desteğine ilişkin algılarını, bağlama özgü olarak değerlendirebilecek geçerli ve güvenilir bir ölçme aracının geliştirilmesine ihtiyaç duyulmaktadır.

Yöntem

Bu araştırma, okul sporlarında mücadele eden öğrencilerin spor ortamlarında akran desteğine ilişkin algılarını değerlendirmeye yönelik geçerli ve güvenilir bir ölçme aracı geliştirmeyi amaçlamaktadır. Nicel araştırma yönteminin benimsendiği çalışmada, ölçek geliştirme süreci kapsamlı bir literatür taramasının ardından madde havuzunun oluşturulması, uzman değerlendirmelerinin alınması, ön uygulamanın gerçekleştirilmesi ve psikometrik özelliklerin test edilmesi süreçleri izlenmiştir (Boateng et al., 2018; Worthington & Whittaker, 2006). Araştırmanın çalışma grubunu, Ankara, İstanbul, Bartın, Diyarbakır ve Van illerinde farklı spor branşlarında (futbol, voleybol, basketbol, vb.) aktif olarak yer alan ortaokul ve lise öğrencileri oluşturmuştur. Açımlayıcı Faktör Analizi (AFA) için 494 öğrenci, Doğrulayıcı Faktör Analizi (DFA) için ise 419 öğrenci çalışmaya katılmıştır. Katılımcılar uygun örnekleme yöntemiyle belirlenmiş, veriler beşli Likert tipi ölçek kullanılarak toplanmıştır. Verilerin analizinde eksik ve uç değer kontrolleri yapılmış, normal dağılım varsayımları incelendikten sonra AFA ve DFA gerçekleştirilmiştir. Faktör yapısı Maximum Likelihood yöntemi ve Oblimin döndürme tekniği ile incelenmiş; tüm analizler uluslararası ölçek geliştirme standartlarına uygun şekilde yürütülmüştür (AERA, APA & NCME, 2014).

Bulgular

Açımlayıcı Faktör Analizi (AFA) sonucunda ölçeğin, 8 maddeden oluşan tek boyutlu bir yapıya sahip olduğu belirlenmiştir. Ölçek, toplam varyansın %47.6'sını açıklamaktadır ve maddelerin faktör yükleri .634 ile .748 arasında değişmektedir. KMO değeri .920, Bartlett küresellik testi sonucu ise $p < .001$ olarak bulunmuştur; bu da verinin faktör analizine uygunluğunu

göstermektedir. Doğrulayıcı Faktör Analizi (DFA) sonuçları, sekiz maddeli modelin yeterli düzeyde uyum gösterdiğini ortaya koymuştur ($\chi^2/sd = 2.19$, RMSEA = 0.0532, SRMR = 0.0272, CFI = 0.981, TLI = 0.974). Tüm maddeler, faktörle güçlü ilişki göstermiştir (yük değerleri: 0.68–0.81). Güvenirlilik analizleri sonucunda ölçeğin iç tutarlılığı yüksek bulunmuştur. Cronbach's alpha = 0.872 ve McDonald's Omega = 0.874 olarak hesaplanmıştır. Yapı geçerliliğini destekleyen diğer bulgular da olumlu bulunmuş; AVE = 0.564 ve CR = 0.912 olarak belirlenmiştir (Cheung et al., 2014).

Sonuç ve Tartışma

Bu araştırmada, okul sporlarında mücadele eden öğrencilerin spor ortamlarında akran desteğine ilişkin algılarını değerlendirmek amacıyla geçerli ve güvenilir bir ölçme aracı geliştirilmiştir. Analizler sonucunda, tek boyutlu ve 8 maddeden oluşan ölçeğin toplam varyansın %47.6'sını açıkladığı; uyum indekslerinin kabul edilebilir düzeyde olduğu belirlenmiştir (CFI = 0.981, TLI = 0.974, RMSEA = 0.0532). Ayrıca, güvenilirlik katsayıları da yüksek bulunmuştur (Cronbach's alpha = 0.872; McDonald's Omega = 0.874). Geliştirilen Spor Ortamlarında Akran Desteği Ölçeği (SOADÖ), spor ortamlarına özgü akran desteği yapısını ölçen geçerli ve güvenilir bir araç olarak literatüre katkı sunmaktadır. Ayrıca, bu ölçek spor ortamlarında akran desteğinin psikososyal boyutlarını kapsayıcı biçimde ele alan ilk Türkçe araçlardan biri olarak literatüre önemli bir katkı sunmaktadır. Uygulamada ise beden eğitimi öğretmenleri, antrenörler ve okul psikolojik danışmanları tarafından öğrencilerin akran desteğine ilişkin algılarını belirlemede işlevsel bir değerlendirme aracı olarak kullanılabilir.

Bu çalışma yalnızca Türkiye'deki devlet okullarında gerçekleştirilmiştir; bu nedenle elde edilen bulgular farklı kültürel bağlamlara genellenemez. Ölçüm aracı yalnızca belirli bir yaş grubunda, okul ortamındaki sporcularla ve Türkiye bağlamında uygulanmıştır; bu nedenle farklı yaş grupları, okul dışı spor grupları ve uluslararası örneklem için geçerliliği henüz test edilmemiştir. Geliştirilen ölçek, beden eğitimi öğretmenleri, okul psikolojik danışmanları ve spor kulübü antrenörleri tarafından, öğrencilerin spor ortamlarında algıladıkları akran desteği düzeylerini izlemek ve gerektiğinde sosyal müdahale programları geliştirmek amacıyla işlevsel bir değerlendirme aracı olarak kullanılabilir.