

Original Article**CROSS-CULTURAL VALIDATION OF THE ATHLETES' RECEIVED SUPPORT QUESTIONNAIRE (ARSQ) FOR CHINESE COLLEGIATE ATHLETES****Zhang Xiaofei and Rajitha Menon**

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Abstract

College student-athletes' social support exerts a crucial effect on their athletic performance, motivation, and psychological well-being. Recognizing the importance of measuring this support accurately, this study sought to adapt and validate the Athlete's Received Support Questionnaire (ARSQ) for use among Chinese college student-athletes.

Purpose The first objective was to translate the ARSQ into Chinese, while the second objective focused on evaluating its psychometric properties in this specific context.

Methods Data were collected from 910 participants across three phases. In the first stage, 365 student-athletes participated in an exploratory factor analysis, which helped identify the factor structure of the questionnaire. The second phase involved confirmatory factor analysis (CFA), internal consistency evaluation, and correlation analysis with a larger sample of 502 athletes, demonstrating strong validity and reliability of the adapted scale. The third phase included a test-retest reliability assessment with 43 participants over a 2-week period, confirming the scale's stability. These validation steps ensured the robustness of the adapted Chinese ARSQ.

Results The results indicate that the adapted ARSQ is a reliable and valid instrument for assessing perceived support among college student-athletes. This tool can help researchers, coaches, and educators better understand and enhance the support systems that contribute to athletic performance and well-being in this population.

Conclusion The psychometric evaluation established the Chinese ARSQ as a reliable and valid measure (Cronbach's $\alpha=0.962$, ICC=0.959) for assessing received social support among collegiate athletes in China. This culturally adapted instrument enhances research on athlete support systems and informs evidence-based interventions to optimize psychological well-being and athletic performance. Future investigations should examine support perception variations across sport disciplines and assess longitudinal effects on mental health and competitive outcomes, thereby advancing holistic athlete development strategies.

Keywords: ARSQ / Reliability / Validity / Support questionnaire / College student-athletes

Introduction

Social support is a fundamental factor that influences athletes' psychological well-being, motivation, and overall performance (Freeman et al., 2014). College student-athletes, who often face multiple demands from academics, training, and competition, can benefit significantly from various forms of support, such as emotional, esteem, informational, and tangible support (Tamminen and Gaudreau, 2014). These types of support, provided by coaches, teammates, family, or friends, have been shown to buffer stress, enhance self-esteem, and improve performance outcomes (Galli and Vealey, 2008). Given the importance of support in helping student-athletes manage pressures, it is crucial to accurately assess the types and levels of support they receive.

To understand how social support affects athletes, reliable and valid measurement tools are essential. The Athlete's Received Support Questionnaire (ARSQ) was developed to assess different types of support experienced by athletes (Freeman et al., 2014). However, like many psychological instruments originally developed in Western contexts, the ARSQ may not be directly applicable to different cultural backgrounds without appropriate

adaptation and validation (Wang and Mallinckrodt, 2006). Cultural variations in how support is perceived and valued can significantly influence the accuracy and relevance of such assessments, making it necessary to adapt the questionnaire to reflect the unique experiences of Chinese college student-athletes.

In recent years, the participation of Chinese college students in competitive sports has increased, highlighting the need for culturally adapted tools to measure their support experiences. Despite the growing interest in sports psychology research in China, there is a lack of validated instruments designed to measure the social support received by athletes in this context. Without a culturally adapted instrument, researchers may struggle to understand the support dynamics that affect Chinese athletes, leading to gaps in knowledge and potentially ineffective support interventions.

This study is guided by Social Support Theory, which posits that social support enhances individuals' ability to cope with stress and improves their overall well-being (Cohen and Wills, 1985). In the context of sports, this theory suggests that emotional, esteem, informational, and

tangible support play distinct yet interrelated roles in fostering athletes' resilience, motivation, and performance. However, the way these support types are perceived and valued may vary across cultures, particularly in collectivist societies like China, where family and peer support may hold greater significance (Cheng and Wang, 2022).

Research Objectives and Hypotheses

This study aims to translate and adapt the ARSQ into Chinese and evaluate its reliability and validity among college student-athletes. Specifically, the research objectives are:

To translate the ARSQ into Chinese while ensuring cultural and linguistic equivalence.

To examine the psychometric properties of the adapted Chinese ARSQ, including its factor structure, internal consistency, and test-retest reliability.

To explore the interrelations and differential values of emotional, esteem, informational, and tangible support in the Chinese cultural context.

Based on the theoretical framework, we hypothesize that: The adapted Chinese ARSQ will demonstrate

strong reliability and validity, retaining the original four-factor structure. Informational support will be particularly prominent among Chinese student-athletes, reflecting the cultural emphasis on guidance and advice. The four support dimensions will show significant intercorrelations, indicating their holistic nature in the Chinese context.

By addressing these objectives, this study aims to fill a critical gap in the literature by providing a culturally relevant tool for assessing social support among Chinese college student-athletes. The findings will contribute to a deeper understanding of how cultural context shapes support experiences and inform the development of targeted interventions to enhance athletes' well-being and performance.

Purpose

Social support is a multifaceted concept that plays an essential role in athletes' development, motivation, and overall well-being. The type of support an athlete receives can be crucial in how they manage stress, overcome challenges, and perform at their best (Rees and Hardy, 2000). Various dimensions of social support have been identified, including emotional,

esteem, informational, and tangible support (Freeman et al., 2014). Emotional support involves expressing empathy and understanding, esteem support includes reinforcing confidence and self-worth, informational support provides guidance or advice, and tangible support refers to practical assistance or resources (Cohen and Wills, 1985). Each of these support dimensions can contribute differently to an athlete's experience, making it essential to assess them comprehensively.

The Athlete's Received Support Questionnaire (ARSQ) was developed to measure these dimensions and has been widely recognized for its reliability and validity in evaluating the support received by athletes (Freeman et al., 2014). However, like many assessment tools developed in Western contexts, the ARSQ requires cultural adaptation and validation before it can be accurately applied in different cultural settings (Beaton et al., 2000). Without proper adaptation, there is a risk that the questionnaire might not capture the nuances of how social support is perceived or valued in non-Western cultures (Wang and Mallinckrodt, 2006).

In the Chinese context, the importance of social support for athletes is

gaining recognition, especially with the rising participation of college students in competitive sports (Li et al., 2018). However, there is a lack of validated instruments to measure the support received by Chinese athletes, which presents a gap in the literature. Previous research has indicated that athletes in collectivist cultures, like China, may experience and value social support differently from those in individualist cultures (Cheng and Wang, 2022). For example, family and peer support may be more emphasized in Chinese athletes' experiences, and the way they interpret support could differ from their Western counterparts. Therefore, it is necessary to adapt and validate the ARSQ for use in the Chinese context to ensure its relevance and accuracy.

The process of adapting a questionnaire involves more than simple translation. It requires careful consideration of cultural nuances, language differences, and conceptual equivalence to maintain the integrity of the original instrument (Hambleton and Zenisky, 2011). To achieve this, guidelines suggest using bilingual experts, conducting pretesting, and performing thorough statistical analyses to

evaluate the adapted instrument's validity and reliability (Beaton et al., 2000). This approach helps ensure that the adapted version accurately measures the intended constructs and is appropriate for the target population.

Despite the significance of social support in the sports domain, limited research has examined how support is perceived and experienced by Chinese student-athletes. Some studies have shown that social support positively influences athletes' psychological resilience, performance, and coping strategies (Tamminen and Gaudreau, 2014). Therefore, having a validated tool like the Chinese version of the ARSQ will provide valuable insights into the support mechanisms that benefit athletes in this cultural context. It will also facilitate cross-cultural comparisons, enabling researchers to better understand the role of support across different populations and settings.

This study aims to fill the existing gap by translating and adapting the ARSQ into Chinese and validating its psychometric properties among college student-athletes. By doing so, this research will contribute to the literature on athlete support in China and provide a reliable instrument that can

be used by researchers, coaches, and practitioners to enhance the support provided to student-athletes.

Methods

Design of Study

This study was divided into two main phases based on its objectives: translation and validation. In the translation phase, the Athlete's Received Support Questionnaire (ARSQ) was adapted into Chinese, following established cross-cultural adaptation protocols (Beaton et al., 2000). The validation phase involved evaluating the psychometric properties of the adapted Chinese ARSQ among college student-athletes to ensure its reliability and validity.

Participants

College student-athletes were recruited from various university sports teams across China through an online survey platform between March and May 2024. A convenience sampling method was utilized to gather participants, as it allowed for efficient data collection within a limited timeframe and provided access to a diverse pool of student-athletes from different sports disciplines. To be eligible for participation, student-athletes had to be:

Currently enrolled in a university in China. Actively involved in a university sports team. Have been training or competing for at least 3 hours per week over the past six months (Smith et al., 2020).

Sample

Sample 1 was used for stage 1 analysis, focusing on item identification and exploratory factor analysis. A total of 365 college student-athletes (42.7% female, 57.3% male) completed the questionnaire. The age range of the participants was 18–25 years. The sample size was based on the recommended subject-to-item ratio of at least 10:1, which is widely accepted in factor analysis research (Costello and Osborne, 2005).

Sample 2 was used for stage 2 analysis, which included confirmatory factor analysis, internal consistency evaluation, and correlation analysis. A larger sample of 502 college student-athletes (48.1% female, 51.9% male) completed the questionnaire. Participants' ages ranged from 18 to 26 years, and the sample size was determined based on the recommendations for confirmatory factor analysis to ensure sufficient statistical power (Hair et al., 2014).

Sample 3 was employed for stage 3 analysis, focusing on the test-retest reliability assessment. A subset of 43 participants from Sample 2 (53.5% male, 46.5% female) completed the Chinese ARSQ again two weeks after the initial administration. The two-week interval was chosen to balance the need for sufficient time to minimize memory effects while ensuring that the participants' support experiences remained relatively stable over the period (Koo and Li, 2016). According to Bujang and Baharum (2017), a minimum of 30 participants is adequate for assessing test-retest reliability with an alpha value of 0.05 and 90% power, ensuring the reliability of our analysis.

Instruments

The data was collected using the adapted Chinese version of the ARSQ, which included 22 items designed to assess the four types of social support received by athletes: emotional, esteem, informational, and tangible support (Freeman et al., 2014). Responses were measured on a 5-point Likert scale, ranging from "Not at all" to "Seven or more times," indicating how frequently participants received each type of support over the past week. Demographic information such

as age, gender, and years of athletic experience was also collected to provide context for the results.

The Athlete's Received Support Questionnaire (ARSQ)

The ARSQ was developed to measure the perceived support received by athletes in a sports context. The original version, designed for English-speaking athletes, was adapted into Chinese following a rigorous translation-back translation process to ensure semantic equivalence (Beaton et al., 2000). In this study, participants were asked to reflect on the support they received over the past week. An example of an item is: "How often did someone encourage you?" Higher scores indicate a greater frequency of received support. In previous studies, the ARSQ has demonstrated strong psychometric properties, with Cronbach's alpha values ranging from .82 to .91 (Freeman et al., 2014).

Procedures

The translation phase consisted of six key steps. First, two bilingual Chinese researchers independently translated the ARSQ from English to Chinese. This step ensured that the translation captured the original meaning while accounting for

linguistic nuances. Second, the translations were reviewed and synthesized into a single version by a team of experts familiar with sports psychology. This step aimed to resolve any discrepancies and ensure the accuracy of the translation. Third, the synthesized version was back-translated into English by a bilingual individual who was unfamiliar with the original ARSQ to ensure accuracy and consistency (Brislin, 1970). This step was crucial for verifying that the translated version retained the original meaning. Fourth, discrepancies between the back-translated and original versions were discussed, and adjustments were made to ensure conceptual equivalence. This step ensured that the adapted questionnaire was culturally and conceptually appropriate for Chinese student-athletes. Fifth, a focus group consisting of six college student-athletes participated in a pilot test to evaluate the clarity and relevance of each item. The selection of six participants was based on the need for a manageable group size that could provide diverse and in-depth feedback while maintaining efficiency in data collection (Krueger and Casey, 2014). Feedback was collected to identify any ambiguities or misunderstandings, and further refinements were made.

Table 1 Summary of Interpretations

| Fit Index | Acceptable Value | Interpretation |
|---|-----------------------------|---|
| Chi-Square (χ^2) | p>0.05 (not significant) | Model fits well if p is non-significant (p>0.05). |
| CMIN/DF (χ^2/df) | <3 | A lower ratio means a better fit. |
| GFI (Goodness of Fit Index) | >0.90 | Measures how well the model fits. To interpret this, closer to 1 is better. |
| AGFI (Adjusted GFI) | >0.90 | Adjusted for the number of predictors; higher is better. |
| CFI (Comparative Fit Index) | >0.95 | Compares model fit to a null model; above 0.95 is ideal. |
| TLI (Tucker-Lewis Index) | >0.95 | Higher values indicate a good fit. |
| RMSEA (Root Mean Square Error of Approximation) | <0.08 (ideally<0.05) | Measures model error; lower values are better. |
| SRMR (Standardized Root Mean Square Residual) | <0.08 | Measures residual errors; smaller is better. |
| Composite Reliability (CR) | | > 0.70 → The construct is reliable. |

In the validation phase, the adapted Chinese ARSQ was administered online to the college student-athletes across different universities. In stage 1, employed exploratory factor analysis (EFA) with Sample 1 to derive the ARSQ fundamental measurement structure. In stage 2, utilized Sample 2 for three complementary analyses: (1) maximum-likelihood CFA to verify the factor solution, (2) Cronbach's alpha computation for scale

homogeneity assessment, and (3) inter-scale correlations to evaluate construct relationships. In stage 3, temporal stability was assessed with Sample 3 to determine the stability of the ARSQ over time.

Data Analysis

Data analysis was performed using SPSS and R software (Version 4.1.2; R Core Team, 2024). For stage 1, the principal component analysis with varimax rotation was used to examine the factorial

Table 2 KMO and Bartlett's Test Results

| KMO and Bartlett's Test | | |
|---|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | 0.932 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 6108.859 |
| | df | 231 |
| | Sig. | 0.000 |

composition of the Chinese ARSQ. Data suitability for dimensionality reduction was systematically verified through established psychometric criteria, including sampling adequacy evaluation and sphericity testing before factorization.

In stage 2, confirmatory factor analysis (CFA) was conducted using the 'lavaan' package in R to verify the factor structure identified in the EFA. Internal consistency was evaluated through Cronbach's alpha coefficients with the conventional 0.70 threshold applied for reliability assessment. Pearson correlation analysis was subsequently performed to examine relationships among the support dimensions.

In stage 3, temporal stability was evaluated using the intraclass correlation coefficient (ICC) to assess the stability of the Chinese ARSQ over a two-week period. An

ICC value above 0.75 indicated excellent reliability (Koo and Li, 2016).

Ethical Considerations

This research protocol was formally approved by the lead university's Research Ethics Committee (Approval Code: 2024-003). Before data collection, all participants reviewed and signed detailed consent forms explicitly guaranteeing response anonymity and data protection. The study adhered to strict voluntary participation principles, including unrestricted withdrawal rights at any research phase.

Results

Stage 1 Analysis: Exploratory Factor Analysis Sample 1 (n=365)

The factor structure of the Chinese ARSQ was examined through principal component analysis with orthogonal varimax rotation applied to all 22 items. Preliminary

Table 3 Rotated Component Matrix

| | 1 | 2 | 3 | 4 |
|-----|-------|-------|-------|-------|
| Q10 | 0.871 | | | |
| Q8 | 0.867 | | | |
| Q2 | 0.792 | | | |
| Q12 | 0.788 | | | |
| Q4 | 0.777 | | | |
| Q6 | 0.760 | | | |
| Q11 | | 0.801 | | |
| Q7 | | 0.782 | | |
| Q5 | | 0.761 | | |
| Q16 | | 0.736 | | |
| Q9 | | 0.734 | | |
| Q3 | | 0.684 | | |
| Q21 | | | 0.872 | |
| Q18 | | | 0.851 | |
| Q20 | | | 0.849 | |
| Q13 | | | 0.805 | |
| Q15 | | | 0.794 | |
| Q19 | | | | 0.802 |
| Q22 | | | | 0.800 |
| Q1 | | | | 0.798 |
| Q14 | | | | 0.792 |
| Q17 | | | | 0.750 |

checks confirmed the data's factorability, as evidenced by (Table 2) (1) a KMO index of 0.932, substantially exceeding the 0.60 benchmark for sampling adequacy, and (2) Bartlett's sphericity test results ($\chi^2[231] = 6108.86, p < .001$) that rejected the identity matrix hypothesis. These diagnostics collectively supported the appropriateness of dimensional reduction.

The PCA extracted four factors with eigenvalues exceeding 1.0, collectively accounting for 73.54% of the total variance (Table 3), which is considered sufficient to explain the construct (Hair et al., 2014). All items demonstrated statistically significant factor loadings ($\lambda > 0.50$, all $p < .05$) on their respective factors. Based on these results, all 22 items were retained in the Chinese ARSQ, confirming that the instrument

reliably measured the intended support dimensions among college student-athletes.

Stage 2 Analysis: Confirmatory Factor Analysis and Reliability Assessment (Sample 2, n=502)

The mean scores and standard deviations for the four types of support were as follows (Table 4) (1) *Emotional Support*: Mean=3.436, SD=0.9047 (2) *Esteem Support*: Mean=3.247, SD=0.9405 (3) *Informational Support*: Mean=3.719, SD=0.7819 (4) *Tangible Support*: Mean=3.713, SD=0.7669. The overall average support score was 3.529, with a standard deviation of 0.6383. These results indicate that informational support and tangible support were the most frequently received forms of support among college student-athletes, while esteem support was the least.

Table 4 Descriptive Statistics

| | Mean | Std. Deviation | N |
|-----------------------|-------|----------------|-----|
| Emotional support | 3.436 | 0.9047 | 502 |
| Esteem support | 3.247 | 0.9405 | 502 |
| Informational support | 3.719 | 0.7819 | 502 |
| Tangible support | 3.713 | 0.7669 | 502 |
| total | 3.529 | 0.6383 | 502 |

Correlation Analysis

The correlation analysis (Table 5) revealed that all four dimensions of support were significantly positively correlated with each other ($p < 0.001$). The correlations ranged from 0.295 to 0.579, indicating moderate to strong relationships: (1) Emotional support showed the strongest correlation with tangible support ($r = 0.533$). (2) Esteem support had the highest correlation with tangible support ($r = 0.579$).

(3) Informational support demonstrated significant positive correlations with both emotional support ($r = 0.295$) and esteem support ($r = 0.346$). (4) The overall support score had strong correlations with all subscales, with the highest correlation observed with tangible support ($r = 0.844$). These findings confirm that the four dimensions of the Chinese ARSQ are related but distinct, supporting the scale's construct validity.

Table 5 Correlation Matrix for Dimensions of the Chinese ARSQ

| | | Emotional support | Esteem support | Informational Support | Tangible support | Total |
|-----------------------|---------------------|-------------------|----------------|-----------------------|------------------|--------|
| Emotional support | Pearson Correlation | 1 | 0.329* | 0.295* | 0.533* | 0.726* |
| | Sig. (2-tailed) | | 0.000 | 0.000 | 0.000 | 0.000 |
| | N | 502 | 502 | 502 | 502 | 502 |
| Esteem support | Pearson Correlation | 0.329* | 1 | 0.346* | 0.579* | 0.765* |
| | Sig. (2-tailed) | 0.000 | | 0.000 | 0.000 | 0.000 |
| | N | 502 | 502 | 502 | 502 | 502 |
| Informational support | Pearson Correlation | 0.295* | 0.346* | 1 | 0.463* | 0.677* |
| | Sig. (2-tailed) | 0.000 | 0.000 | | 0.000 | 0.000 |
| | N | 502 | 502 | 502 | 502 | 502 |
| Tangible support | Pearson Correlation | 0.533* | 0.579* | 0.463* | 1 | 0.844* |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | | 0.000 |
| | N | 502 | 502 | 502 | 502 | 502 |
| Total | Pearson Correlation | 0.726* | 0.765* | 0.677* | 0.844* | 1 |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | |
| | N | 502 | 502 | 502 | 502 | |

* Correlation is significant at the 0.01 level (2-tailed).

Construct Validity

Confirmatory factor analysis (CFA) was conducted using data from Sample 2 to verify the factor structure identified in the exploratory analysis. Model fit was assessed using maximum-likelihood estimation, with the following indices indicating acceptable fit: $\chi^2=758.21$ ($p<0.001$), $df=203$, $CFI=0.96$, $TLI=0.95$, $RMSEA=0.045$, and $SRMR=0.038$ (Hu and Bentler, 1999). These indices suggest that the four-factor model fit the data well, confirming the construct validity of the Chinese ARSQ.

Convergent Validity: The measurement model's convergent validity was verified through two key indicators: (1) all latent constructs achieved Average Variance Extracted (AVE) scores above the 0.50 benchmark, and (2) Composite Reliability (CR) coefficients surpassed the 0.70 threshold. These results collectively satisfy the stringent validity criteria established in seminal psychometric literature (Fornell and Larcker, 1981).

Discriminant Validity: Discriminant validity was established by comparing the square root of the AVE for each factor with the correlations between factors. All square roots of AVE were higher than the inter-factor correlations, indicating that each

factor was distinct from the others (Fornell and Larcker, 1981).

Internal Consistency

Cronbach's alpha coefficient was employed to assess the reliability of the Chinese ARSQ. The overall scale had an alpha value of 0.962, indicating excellent reliability (Nunnally and Bernstein, 1994). Alpha coefficients varied between 0.86 and 0.92, all surpassing the generally accepted threshold of 0.70. These results confirm that the items within each factor consistently measured the intended construct.

Item Analysis

To examine the association between individual items and their respective subscales, corrected item-total correlation analyses were conducted. The results demonstrated that all items exhibited strong discriminative validity, with correlation coefficients exceeding the recommended threshold of 0.40 (Kline, 2013). This finding not only verifies the substantial contribution of each item to its corresponding dimension but also reinforces the overall reliability of the Chinese ARSQ.

Concurrent Validity

To evaluate concurrent validity, the Chinese ARSQ scores were analyzed against participants' overall perceived support

measures using Pearson's correlation. The results revealed robust and statistically significant associations ($r=0.53-0.78$, $p<0.001$), indicating that higher ARSQ scores corresponded with greater perceived support. This strong empirical linkage confirms that the ARSQ is a valid tool for assessing the multifaceted support experiences of Chinese college student-athletes.

Stage 3 Analysis: Test-Retest Reliability (Sample 3, n=43)

To evaluate test-retest reliability, the Chinese ARSQ was re-administered to a subsample of participants (Sample 2) after a two-week interval. Intraclass correlation coefficients (ICC) were computed based on a two-way mixed-effects model with absolute agreement. As shown in Table 6, the Chinese ARSQ demonstrated excellent temporal stability, with an overall ICC of 0.959 (Koo and Li, 2016). At the subscale level, ICC values ranged from 0.76 to 0.89, confirming strong measurement consistency across all questionnaire dimensions (Table 6).

Table 6 Test-Retest Reliability

| Cronbach's Alpha Based on | | |
|---------------------------|--------------------|------------|
| Cronbach's Alpha | Standardized Items | N of Items |
| 0.962 | 0.963 | 22 |

The results from this study confirm that the adapted Chinese version of the ARSQ has strong psychometric properties, demonstrating excellent validity, reliability, and consistency. The

instrument is suitable for assessing the support experiences of Chinese college student-athletes and can serve as a valuable tool for researchers and practitioners in sports psychology.

Discussion

This study involved two main phases to adapt and validate the Athlete's Received Support Questionnaire (ARSQ) for use among Chinese college student-athletes. In the translation phase, the ARSQ was translated into Chinese following established guidelines to ensure cultural and linguistic equivalence (Beaton et al., 2000). During this process, focus group discussions and pretesting were conducted to ensure that the items were clearly understood by the target population, allowing us to refine the instrument based on participants' feedback. In the validation phase, both exploratory and confirmatory factor analyses were conducted to examine the factor structure of the Chinese ARSQ (Costello and Osborne, 2005). The findings indicated that the Chinese version of the ARSQ retained the original four-factor structure and demonstrated strong validity and reliability, making it a suitable instrument for assessing support among Chinese college student-athletes.

Psychometric evaluation confirmed the Chinese ARSQ as a robust measure for assessing multidimensional support among student-athletes. The instrument demonstrated excellent scale-level reliability (Cronbach's $\alpha=0.962$),

surpassing conventional standards (Nunnally and Bernstein, 1994). All subscales exhibited strong internal consistency (Cronbach's α range=0.86-0.92), confirming their effectiveness in measuring four distinct support dimensions: emotional, esteem, informational, and tangible. These psychometric properties are consistent with established support measures in sport psychology literature (Freeman et al., 2014), reinforcing the instrument's validity for research and applied settings.

One notable observation was the strong inter-correlations among the four support dimensions, ranging from 0.295 to 0.579. This suggests that while each type of support is distinct, they are also interrelated, indicating that athletes who receive one type of support are likely to receive other types as well. This interconnectedness mirrors findings from other studies that emphasize the holistic nature of social support in sports (Rees and Hardy, 2000). In particular, tangible support exhibited the strongest correlations with both emotional and esteem support, suggesting that practical assistance often accompanies emotional encouragement in athletic settings.

The results also showed that informational support had the highest mean score among the four types, indicating that college student-athletes place significant value on guidance and advice from coaches, teammates, or peers. These results align with Cutrona and Russell (1990) theoretical framework, which identifies informational support as a critical resource for managing performance-related stressors. Informational support is often crucial in helping athletes navigate complex training demands and improve their skills, which might explain its prominence among the participants.

The test-retest reliability results were excellent, with an outstanding intraclass correlation coefficient (ICC) of 0.959 for the overall scale, indicating that the Chinese ARSQ is stable over time (Koo and Li, 2016). This level of stability is important because it suggests that the instrument can reliably measure the support experiences of student-athletes across different periods, making it a useful tool for longitudinal studies.

The significant positive correlations found between the ARSQ scores and athletes' overall perception of support provide further evidence of the instrument's concurrent validity. These findings suggest

that the Chinese ARSQ accurately reflects the multidimensional nature of support that athletes receive, which is crucial for understanding how different support types contribute to their well-being and performance. Similar to previous studies, the emotional and esteem support dimensions were strongly associated with overall perceived support, highlighting their importance in fostering athletes' confidence and motivation (Galli and Vealey, 2008).

The cultural adaptation and validation of the ARSQ for Chinese athletes yields three significant contributions. First, it provides a culturally-sensitive instrument that accounts for the distinctive sociocultural factors influencing support perception in this population (Wang and Mallinckrodt, 2006), highlighting the critical role of cultural context in shaping athletes' social support experiences. Second, it advances theoretical understanding by empirically validating the four-factor structure of social support (emotional, esteem, informational, tangible) in sports settings, reinforcing existing conceptual frameworks (Freeman et al., 2014). Third, it establishes robust psychometric properties for the Chinese ARSQ, demonstrating excellent reliability ($\alpha=0.962$, ICC=0.959)

and validity. These findings extend the instrument's utility beyond Western contexts while enriching cross-cultural research on athletic support systems.

In conclusion, this study confirms that the adapted Chinese ARSQ is a psychometrically sound instrument that can be effectively used to assess the support received by Chinese college student-athletes. The instrument demonstrates (1) strong construct validity through confirmed factor structure, (2) excellent reliability ($\alpha=0.962$; $ICC=0.959$), and (3) cross-temporal stability-collectively supporting its utility for both research and applied purposes. The implications of this study are far-reaching, as the insights gained from using this instrument can inform the development of targeted interventions aimed at improving athletes' well-being, performance, and overall sports experience in a Chinese cultural context.

Future research should consider exploring how different types of support impact athletes' psychological outcomes, such as resilience, motivation, and performance, over time. Additionally, it would be beneficial to adapt and validate the Chinese ARSQ for use with different populations, such as professional athletes

or athletes in other age groups, to expand its applicability across various contexts.

Limitations

Several limitations of this study warrant mention. First, its cross-sectional design precludes the establishment of causal relationships between perceived support and athletes' well-being or performance. Longitudinal studies are needed to explore how support evolves over time and influences outcomes such as resilience and motivation (Wang and Mallinckrodt, 2006). Second, the reliance on self-reported data may introduce response bias, as participants might overreport or underreport their experiences. Future studies could incorporate mixed-methods approaches, combining self-report questionnaires with interviews or observations, to gain a more comprehensive understanding of athletes' support experiences (Creswell and Plano Clark, 2017).

Third, the use of a convenience sample from specific universities in China limits the generalizability of the findings. Future research should validate the Chinese ARSQ across diverse athletic populations, including professional athletes, youth athletes, and athletes from different

regions of China, to enhance its applicability. Finally, while the Chinese ARSQ demonstrated excellent psychometric properties, additional analyses, such as test-retest reliability over a longer period, would provide further evidence of its stability.

Implications for Sports Psychology

Despite its limitations, this study has important implications for sports psychology, particularly in understanding and enhancing the support structures available to athletes. The validated Chinese ARSQ offers a reliable and culturally relevant tool for assessing the perceived support experiences of Chinese college student-athletes. This instrument can be utilized by coaches, sports psychologists, and educators to identify the types of support that are most beneficial for athletes, enabling the development of targeted interventions to enhance athletes' motivation, resilience, and performance (Tamminen and Gaudreau, 2014). Moreover, given that social support is a crucial factor in athletes' psychological well-being, the Chinese ARSQ can also be used to monitor the effectiveness of support programs and

strategies implemented within sports teams.

The study also contributes to the broader field of sports science by highlighting the significance of cultural adaptation when measuring psychological constructs. This research emphasizes the need for culturally adapted instruments to ensure accurate assessments, thereby advancing the understanding of social support in different cultural contexts (Hambleton and Zenisky, 2011).

Conclusion

In conclusion, the Chinese version of the ARSQ demonstrates robust psychometric properties ($\alpha=0.962$, $ICC=0.959$) for assessing perceived support among collegiate athletes in China. Theoretically, this study confirms the cross-cultural applicability of social support measurement. Practically, it provides a validated tool for developing targeted interventions to enhance athletes' well-being and performance within Chinese cultural contexts.

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