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Research Article

Wrestling-Related Knowledge Among State-Level Wrestlers: Development of a Multidimensional Questionnaire and Descriptive Analysis

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Abstract

Purpose: The study examined wrestling-related knowledge among state-level wrestlers and described the development and preliminary measurement properties of a questionnaire covering five knowledge domains. Methods: The source chapter reports an 86-item questionnaire comprising History of Wrestling (15 items), Rules and Regulations (17), Training and Practice (13), Nutrition (26), and Doping (15). Expert review was used to assess content validity, and test–retest reliability was examined in a pilot group of 30 wrestlers over four weeks. The survey results reported in the chapter refer to 500 state-level wrestlers. Descriptive statistics and item-wise percentages were summarized. Results: The reported overall mean was 66.75 (SD = 8.91) out of 86, equivalent to 77.62% of the maximum score. Domain mean percentages ranged from 74.53% for Doping to 79.00% for Rules and Regulations and Nutrition. The overall content validity index was reported as 0.90, while domain test–retest coefficients ranged from 0.68 to 0.84, with an overall coefficient of 0.78. In a separate categorical summary, adequate knowledge was reported as highest for Rules and Regulations (78%) and lowest for History of Wrestling (42%). The findings of the present study indicate that state-level wrestlers demonstrated a generally favourable level of knowledge across the various domains assessed by the Wrestling Knowledge Questionnaire. However, relative gaps were observed in wrestling history, anti-doping practices, nutrition, and selected training concepts, highlighting the need for targeted educational interventions. The findings emphasise the importance of integrating theoretical knowledge with practical wrestling training to enhance athletes' understanding of the technical, nutritional, regulatory, and ethical aspects of the sport. Structured awareness programmes, workshops, and periodic knowledge assessments may help strengthen these areas and support the holistic development of wrestlers. Overall, the study highlights the significance of sport-specific knowledge in promoting informed participation and responsible sporting practices among state-level wrestlers.

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KEYWORDS: wrestling, sports knowledge; questionnaire development; content validity; test–retest reliability; sports nutrition; anti-doping

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1. INTRODUCTION

Wrestling performance depends on more than physical conditioning and technical proficiency. Athletes also need to understand the history and culture of the sport, competition rules, training principles, nutrition, and anti-doping requirements. Such knowledge can support informed preparation, safer training decisions, appropriate fuelling and recovery, and participation consistent with the principles of fair play.

The source material underlying this paper treats wrestling-related knowledge as a multidimensional construct. It identifies five domains: History of Wrestling; Knowledge of Rules and Regulations; Training and Practice; Nutrition; and Doping. The inclusion of these domains reflects the broad range of information relevant to competitive wrestlers, from sport-specific history and officiating procedures to physical preparation and ethical competition.

The source chapter reports that the questionnaire was developed after reviewing literature and consulting wrestling coaches, physical education specialists, sports scientists, and research-methodology experts. An initial pool of 110 multiple-choice items was reduced to 86 following expert scrutiny. The resulting tool was intended to provide a structured way of assessing knowledge among state-level wrestlers.

The purpose of the present paper is to consolidate the reported questionnaire-development information and descriptive findings into a journal-style manuscript. The paper does not claim causal relationships or group differences because the supplied material does not provide the raw respondent-level data needed for those analyses.

2. METHODOLOGY

2.1 Research design and participants

The present study adopted a questionnaire-based survey method to assess the selected aspects of wrestling among 500 state-level wrestlers. The participants were selected from the target population of state-level wrestlers to obtain relevant information in accordance with the objectives of the study. In addition to the main survey, a pilot try-out was conducted with 30 wrestlers who possessed characteristics similar to those of the participants in the main study. The pilot try-out was undertaken to examine the clarity, comprehensibility, and suitability of the questionnaire and to identify any difficulties that might arise during its administration.

The main study comprised 500 state-level wrestlers, while the pilot try-out involved a separate group of 30 wrestlers. The questionnaire served as the primary instrument for collecting data from the participants. However, the specific sampling technique, sampling frame, recruitment procedure, geographical distribution, age and sex composition, inclusion and exclusion criteria, and response rate should be reported based on the original study records to ensure methodological transparency and replicability. These details are important for understanding the characteristics of the sample and assessing the extent to which the findings may be generalised to the wider population of state-level wrestlers. The data collected through the questionnaire were intended to address the research objectives and provide a basis for the subsequent analysis and interpretation of the findings.

2.2 Instrument development

The questionnaire was developed in three broad phases: preliminary, middle and final. The preliminary work included a review of books, research articles, coaching manuals, wrestling regulations, and sports nutrition guidance, alongside discussions with subject experts. An initial pool of 110 multiple-choice items was drafted. Expert review considered item relevance, clarity, difficulty, and content coverage; ambiguous or repetitive items were revised or removed. The final instrument contained 86 items distributed across five domains.

Table No. 1

Domain	Items	Share of questionnaire
History of Wrestling	15	17.44%
Rules and Regulations	17	19.77%
Training and Practice	13	15.12%
Nutrition	26	30.23%
Doping	15	17.44%
Total	86	100.00%

2.3 Content validity and reliability

The source reports expert-based content validity indices (CVI) of 0.89 for History of Wrestling, 0.92 for Rules and Regulations, 0.87 for Training and Practice, 0.94 for Nutrition, and 0.90 for Doping. The overall CVI was reported as 0.90.

Test–retest reliability was assessed by readministering the questionnaire to the pilot group after four weeks. Reported coefficients were 0.78, 0.84, 0.76, 0.82, and 0.68 for the five domains respectively, with an overall coefficient of 0.78.

Table No. 2

Domain	CVI	Test–retest r
History of Wrestling	0.89	0.78
Rules and Regulations	0.92	0.84
Training and Practice	0.87	0.76
Nutrition	0.94	0.82

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Doping	0.90	0.68
Overall questionnaire	0.90	0.78

2.4 Data analysis:

The data were analysed using descriptive statistical techniques, including mean, standard deviation, percentage analysis, and item-wise classification of knowledge levels. Domain-wise mean percentages were calculated relative to the maximum possible score for each domain to facilitate comparisons across the different dimensions of the Wrestling Knowledge Questionnaire. Item-wise responses were classified into adequate, partial, and inadequate knowledge categories to identify the areas of relative strength and those requiring further improvement. The descriptive findings were used to summarise the overall and domain-specific knowledge levels of state-level wrestlers and to facilitate the interpretation of the study results.

3. RESULTS

3.1 Overall score distribution

The source chapter reports a total questionnaire mean of 66.75 (SD = 8.91) out of 86 items for 500 state-level wrestlers. This corresponds to 77.62% of the maximum possible score. The same source reports a quartile deviation of 6.05, skewness of −0.28, and kurtosis of 0.24. The reported score distribution was interpreted in the chapter as approximately normal; however, this interpretation should be checked against the original data and the statistical procedures used.

Table No. 3

Measure	Source-reported value
Sample size (N)	500
Maximum questionnaire score	86
Mean score	66.75
Standard deviation	8.91
Mean as percentage of maximum	77.62%
Quartile deviation	6.05
Skewness	−0.28
Kurtosis	0.24

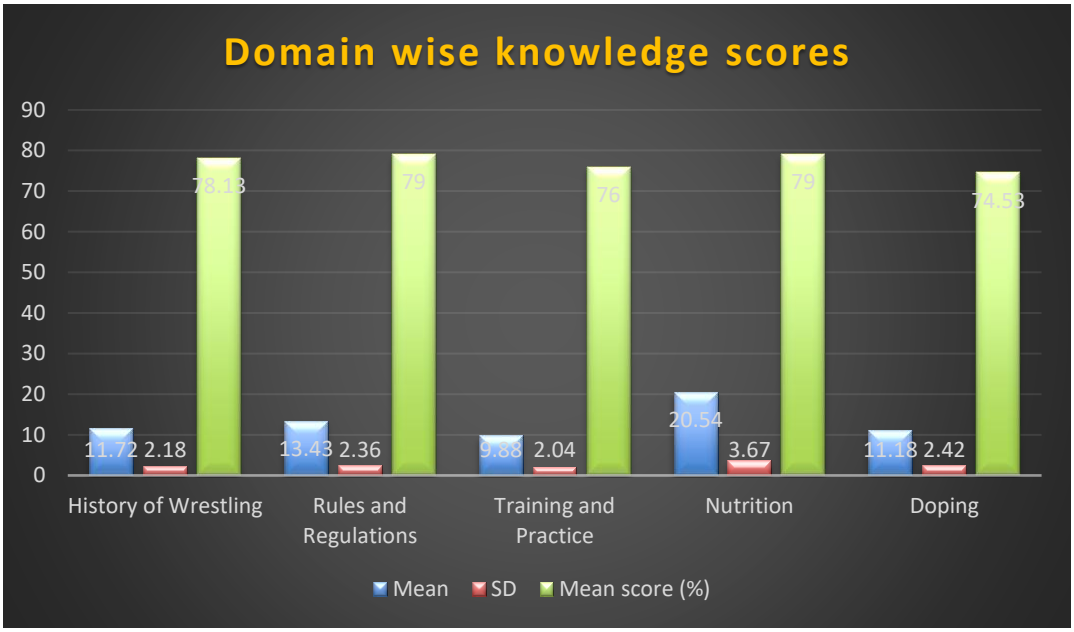
3.2 Domain-wise knowledge scores

Table 4: presents the domain-wise descriptive values reported in the source chapter. Rules and Regulations and Nutrition had the highest reported mean percentages (79.00% each), while Doping had the lowest (74.53%). The difference between the highest and lowest domain mean percentages was modest (4.47 percentage points).

Table No. 4

Knowledge domain	Items/maximum	Mean	SD	Mean score (%)
History of Wrestling	15	11.72	2.18	78.13
Rules and Regulations	17	13.43	2.36	79.00
Training and Practice	13	9.88	2.04	76.00
Nutrition	26	20.54	3.67	79.00
Doping	15	11.18	2.42	74.53

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Graph no.1: Graphical representation of domain-wise knowledge

3.3 Categorical summary of knowledge

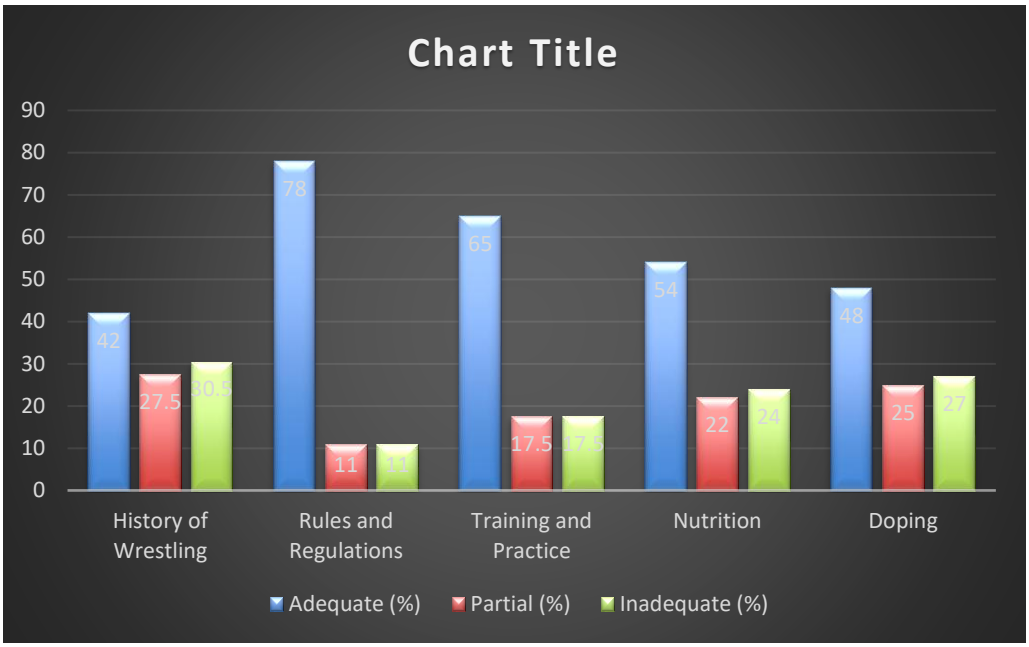
A separate summary table in the source classifies participants' knowledge as adequate, partial, or inadequate. These percentages are reproduced below as reported and should not be treated as equivalent to the domain mean percentages in Table 3: the two summaries use different scoring presentations, and the supplied chapter does not explain the classification algorithm in enough detail to reconcile them.

Domain	Adequate (%)	Partial (%)	Inadequate (%)
History of Wrestling	42.0	27.5	30.5
Rules and Regulations	78.0	11.0	11.0
Training and Practice	65.0	17.5	17.5
Nutrition	54.0	22.0	24.0
Doping	48.0	25.0	27.0

At the item level, the source reports that the highest adequate-knowledge response in the History domain was 48.8% for an item concerning a famous Indian wrestler, whereas the lowest was 35.8% for the question on wrestling's ancient origins. In Rules and Regulations, the highest adequate-knowledge percentage was 84.8% for the mat danger-zone question and the lowest was 72.0% for the item on the international governing organization. In Training and Practice, adequate knowledge ranged from 58.8% for knowledge of aerobic and anaerobic exercise types to 71.4% for exercises improving muscular endurance.

For Nutrition, the source-reported item percentages suggest uneven understanding across food selection, nutrient requirements, meal timing, hydration, supplementation, and recovery. The categorical summary reports 54% adequate, 22% partial, and 24% inadequate knowledge. For Doping, the categorical summary reports 48% adequate, 25% partial, and 27% inadequate knowledge. Item-wise doping results in the source identify 55% adequate knowledge for a question about prohibited stimulants/performance-enhancing substances and 42.2% for a question about doping methods. These values are descriptive and depend on the source document's response coding.

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Graph No. 2: Graphical representation of categorical summary

4. DISCUSSION

The reported results suggest that wrestling-related knowledge is not uniform across domains. Rules and Regulations and Nutrition had the highest mean percentages, while Doping had the lowest. In the separate categorical summary, Rules and Regulations again had the largest proportion classified as having adequate knowledge, whereas History of Wrestling and Doping showed more substantial proportions in the partial or inadequate categories. Taken together, these patterns point to potential priorities for athlete education, but they should be interpreted cautiously until the two types of summaries are reconciled.

Knowledge of competition rules is practically relevant because wrestlers must understand scoring, mat specifications, officiating, and competition procedures. The high reported adequate knowledge percentage for the mat danger-zone item suggests relative strength in a specific technical area, while the lower percentage for identifying the international governing organization suggests an opportunity to reinforce knowledge of wrestling governance and rules updates.

The results for Training and Practice suggest a need to strengthen understanding of conditioning concepts, particularly aerobic and anaerobic exercise, neuromuscular coordination, and the application of training principles. Coaches could integrate short knowledge checks into regular training sessions and connect the scientific rationale for training methods with the drills athletes perform.

Nutrition was the largest questionnaire domain, accounting for 30.23% of all items. Although its reported mean percentage was high, the categorical summary classified 46% of participants as having partial or inadequate knowledge. The source's item descriptions point to potentially important educational topics, including macronutrient balance, meal timing, hydration, recovery nutrition, and supplement literacy. Any educational content should be delivered by appropriately qualified sports-nutrition professionals and adapted to athletes' needs.

Doping was the lowest-scoring domain by mean percentage and had 52% of participants in the partial or inadequate categories in the source's categorical summary. The findings support the practical value of structured, recurring anti-doping education. Such education should explain applicable anti-doping rules, health risks, supplement contamination risks, medication-checking procedures, and the ethical principles of clean sport. The source's item concerning personal use or recommendation of performance-enhancing substances must be interpreted carefully: a knowledge-category percentage is not direct evidence of actual doping behaviour.

The reported overall CVI of 0.90 and test–retest coefficient of 0.78 provides preliminary support for the questionnaire's content coverage and temporal stability. Nevertheless, content validity and test–retest reliability alone do not establish a fully standardized instrument. Further work should document item-level scoring, item difficulty and discrimination, internal consistency where appropriate, construct validity, and cross-validation in independent samples. The relatively lower reported test–retest coefficient for Doping ($r = 0.68$) also warrants closer inspection.

5. Practical implications

Develop brief, periodic knowledge sessions on wrestling history and major national and international milestones.

Use rule-based quizzes and demonstrations to reinforce competition procedures, scoring, officiating, and governance. Connect conditioning drills with short explanations of

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aerobic/anaerobic demands, coordination, recovery, and periodization.
Provide evidence-informed nutrition education on hydration, meal timing, recovery, and supplement safety.
Deliver structured anti-doping education and teach athletes how to check medications and supplements through official channels.
Repeat knowledge assessments after educational interventions to determine whether knowledge improves.

6. LIMITATIONS

The present study has certain methodological limitations that should be considered when interpreting the findings. Information regarding the sampling technique, demographic characteristics of the participants, geographical distribution, response rate, scoring procedures, missing-data management, and ethical approval was not sufficiently documented. Although item-wise percentages and summary statistics were reported, the accuracy of these results requires verification against the original dataset. Furthermore, the procedures used to classify mean scores into different categories were not clearly specified, which may affect the interpretation of the findings. Therefore, the results should be interpreted with caution, and generalisation to the wider population of state-level wrestlers should be made only after considering the representativeness of the sample and the adequacy of the research methodology. As the study employed a questionnaire-based survey design, the findings describe the responses of the participants and do not establish causal relationships.

7. CONCLUSION

The present study revealed that state-level wrestlers demonstrated a relatively high level of knowledge across the various domains assessed by the Wrestling Knowledge Questionnaire, with an overall mean score of 66.75 out of 86. Knowledge of Rules and Regulations and Nutrition was comparatively higher, with both domains recording mean percentages of 79.00%, whereas Doping recorded the lowest mean percentage (74.53%). The findings highlight the importance of strengthening wrestlers' knowledge of wrestling history, nutritional practices, and anti-doping measures. Implementing structured educational programmes, workshops, and awareness initiatives may help address these knowledge gaps and promote informed decision-making among wrestlers. The study emphasises the importance of sport-specific knowledge in wrestler education and development and suggests that integrating theoretical knowledge with practical training may contribute to the overall development of athletes.

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