

## **Validation of a Newly Developed Questionnaire to Assess Nutritional Knowledge & Practices of Wrestlers in Maharashtra**

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### **Abstract**

**Background and objective:** The aim of this study was to develop a questionnaire for assessing nutritional knowledge and practices of wrestlers in Maharashtra.

**Design:** The first draft of the questionnaire (80 items) was based on literature review. To ensure content and face validity, an expert panel examined the questionnaire. Thereafter, the questionnaire was pilot tested in a group of 40 wrestlers from Sangli district of Maharashtra. The results were analyzed for item difficulty, item discrimination, internal consistency and comments made by respondents. In addition the test retest, validity and a total overview of the questionnaire was made by the expert panel. The final questionnaire consisted of 61 items.

**Subjects:** The study was conducted in 1120 wrestlers from different weight category from Sangli district of Maharashtra.

**Results:** Results of this study showed that the test retest reliability coefficient was ranged from 0.48 to 0.65. Further, split half reliability was determined in calculating the relationship between the score of each wrestler (even and odd number) in the questionnaire ( $r=0.68$ ,  $p<0.01$ ). This ensures that the questionnaire is reliable. Finally, the questionnaire was having 61 items/questions.

**Conclusion:** The questionnaire was shown to have good face and content validity among the wrestlers. It has also been found to be useful, easy to administer tool and in a format appealing to respondents. The questionnaire is expected to assist comprehensive data collection to create a profile of knowledge and practices among wrestlers of Maharashtra.

**Keywords:** Nutritional knowledge, practices, wrestlers.

### **Introduction**

A wrestler's diet has a profound impact on overall performance. Wrestling is a very physically demanding sport. Proper nutrition helps a wrestler feel strong both physically and mentally. However, the wrong diet can lead a wrestler feeling weak, dehydrated, and unproductive in their training. Many wrestlers do not receive proper nutrition that is required to compete in this sport. This is generally due to a wrestler's lack of knowledge or unconcerned attitude toward his nutritional needs and/or misinformation or poor financial status. Successful wrestlers know that good nutrition is an essential component of their daily training ritual. They realize that good eating habits help them to compete at a much higher level of competitions.

Thus, nutritional knowledge and practices are very important for wrestlers to achieve high performance in competitions. Wrestling is the sport of different weight categories; therefore, the caloric requirement of different weight category of wrestlers is also different. The wrestlers can maintain their bodyweight only if the total energy intake is equal to energy expenditure. If the intake is more than energy expenditure then the weight increases. In fact, adolescent athletes who

participate in weight-classified sports such as wrestling are at risk for developing eating disorders or disordered eating patterns due to lack of nutrition knowledge. Further, nutrition control is a major factor in coordinating and organizing training to achieve best results in sports activities in general and specifically in weight dependant sports<sup>[1]</sup>. Weight control is a very important aspect that coaches should consider because of the clear relation between weight control and motor performance of athletes. In addition, weight is the base for involving in sports like boxing and wrestling<sup>[2]</sup>. Nutrition control plays a major role in stabilizing and maintaining weight so that each athlete plays according to a fixed weight and if he/she gains more weight he/she is at risk of being eliminated from the competition and due to that all his/her efforts, along with the coach's efforts might go in vain. So, each athlete needs to control his/her weight to avoid exhaustion of weight lose that may affect the performance level during competitions<sup>[3]</sup>. Weight control depends on the kind of food and level of physical activity, along with correct nutrition habits. However, to maintain weight fasting, purging, restricting fluids, and using laxatives and diuretics are frequently observed behaviors among wrestlers. This often results in severe dehydration which may lead to heart abnormalities and even death. Wrestling coaches strongly influence the knowledge and behaviors of their athletes. It is well recognized that optimal nutrition can enhance athletic performance<sup>[4,5]</sup>. However, numerous barriers can hinder athletes from achieving optimal dietary practices, including a lack of time, insufficient financial resources, limited meal-planning and preparation skills, and busy travel schedules<sup>[6]</sup>. Previous studies on athletes' nutrition knowledge indicate that many college athletes do not understand basic nutrition concepts yet are receptive to receiving nutrition education<sup>[7-13]</sup>. Nevertheless, nutrition information is imparted to athletes from diverse sources including coaches, teammates, athletic trainers, fitness trainers, parents, supplement manufacturers, and the media<sup>[14]</sup>. Unfortunately, many of these sources are not suitable, and at times the information imparted is unreliable and only adds to the myths surrounding nutrition that may affect athletes' diet<sup>[15]</sup>.

In fact, knowledge is recognized to be one of the components for change of food habits<sup>[16,17]</sup> but research is, however, inconclusive on how important nutrition knowledge is for changing dietary behavior<sup>[18-21]</sup>. One of the explanations for the inconclusive findings could be that knowledge has been poorly measured<sup>[22]</sup>. Knowledge can be difficult to assess and good instruments for valid and reliable measurements are required<sup>[23]</sup>. Kline had defined a set of criteria for constructing a valid and reliable test that can be used for measuring psychological attributes, including nutrition knowledge<sup>[24]</sup>. Parmenter and Wardle<sup>[25]</sup> focused on psychometric measures when developing their questionnaire to measure general nutrition knowledge among adults. Furthermore, they have developed a guide for evaluation and design of nutrition knowledge measures. Psychometric methods have been used by several in development of existing nutrition knowledge questionnaires<sup>[26]</sup>. However, there is lack of questionnaire on nutrition knowledge and practices among wrestlers therefore; the aim of the present study was to develop a nutrition knowledge questionnaire with satisfactory reliability and validity for use among wrestlers.

## **Methods and Results**

### ***Developing the questionnaire item pool***

On the basis of review and various aspects that were needed for preparation of questionnaire, it was decided to divide the questionnaire into four main dimensions: *general knowledge on nutrition, food, diet and vitamins/minerals*. Using these broad categories, an item pool of 80 was generated. Some items were taken from existing questionnaires while others were generated

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from the literature with advice from nutrition expert. It is believed that this process served to maximise the content validity of the questionnaire, that is, that the items selected were representative of the whole area of knowledge being measured.

Using this pool of items, two reviews were carried out by a panel of three psychologists and three nutritionist to select the best in terms of clarity of the questions, accuracy of the nutritional knowledge being tapped and interpretability. Further, the questionnaire was a 3-point scale i.e., each question has three alternative answers and each dimension was represented with 20 questions each. Thus, the face validity of the questionnaire was maintained. The suggestions from these experts were incorporated this process reduced the number of items to 70. Thus the preliminary instrument was then ready for piloting in a general population sample.

***Subjects for the preliminary questionnaire***

40 wrestlers from Sangli district of Maharashtra were selected for first try-out basis. The difficulties faced by the sample-subjects and the time taken while filling up the questionnaire were noted. Primarily, the questionnaire (with 70 questions) was administered on 40 male wrestlers of mixed group (irrespective weight categories) and was re-administered after a gap of one month, the test-retest reliability coefficient was ranged from 0.48 to 0.65 Table 1. However, the experts' opinions reveal that the questionnaire ensures content validity.

**Table 1**  
**Test-retest reliability of the questionnaire**

Dimension	Coefficient of reliability
A) Knowledge of nutrition	0.63
B) Intake of Food	0.60
C) Diet	0.65
D) Vitamins & Minerals	0.48

Thus, the preliminary form of the questionnaire was found reliable and valid.

***Administration of questionnaire on large sample***

The preliminary form of the questionnaire was administered on large sample (n=1120) wrestlers. The results were analysed both quantitatively (for item difficulty, item discrimination and internal consistency) and qualitatively (which involved looking at comments made by respondents). Each item (question) considers two types of analysis viz., degree of item difficulty (item-difficulty-index or cP) and item-discrimination (ULI i.e., Upper-Lower Index). The dimension-wise average values of item-difficulty index and item-discrimination are presented in Table 2.

*Variorum Multi-Disciplinary e-Research Journal*  
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**Table 2**  
**Values of item-difficulty index and item-discrimination**  
(Dimension-wise)

Dimension	No. of items retained	item-difficulty-index or cP	item-discrimination
A) Knowledge of nutrition	<b>Item Nos.</b> 1,3,6,7,12, 17, 20, 21, 22, 24, 25, 36, 41, 48, 60 <b>Total = 15 Questions</b>	0.61*	0.39**
B) Intake of Food	<b>Item Nos.</b> 8, 10, 11, 13, 14, 16, 26, 27, 28, 33, 46, 49, 54 <b>= 13 Questions</b>	0.54*	0.41**
C) Diet	<b>Item Nos.</b> 4, 5, 18, 19, 23, 29, 30, 31, 34, 35, 37, 38, 39, 42, 43, 55, 56, 57, 59, 61 <b>= 20 Questions</b>	0.59*	0.35**
D) Vitamins & Minerals	<b>Item Nos.</b> 2, 9, 15, 32, 40, 44, 45, 47, 50, 51, 52, 53, 58 <b>= 13 Questions</b>	0.51*	0.38**
Retained items = 61			

\*Accepted range of cP value: From 0.5 to 0.7.

\*\*Accepted range of Item discrimination: Above 0.33

Table 2 reveals that the values of item difficulty and item discrimination were retained within a normal range. The result of item analysis indicates that in Dimension-A (Knowledge of nutrition), Dimension-B (Intake of food), Dimension-C (Diet), and Dimension-D (Vitamins & Minerals), the retained questions were 15, 13, 20, and 13 respectively. Thus, total 61 questions finally retained in the questionnaire.

Since there was no other questionnaire parallel to this questionnaire, the construct validity was established through item-total correlation, where the score of individual question was correlated with total score secured by 1120 sample. Thus, the validity coefficient was ranged from 0.63 to 0.67. This ensures that the questionnaire is valid.

Further, split half reliability was determined in calculating the relationship between the score of each wrestler (even and odd number) in the questionnaire ( $r=0.68$ ,  $p<0.01$ ). This ensures that the questionnaire is reliable. Finally, the questionnaire was having 61 items/ questions which could be an effective tool for the assessment of nutritional knowledge among the wrestlers of Maharashtra.

### **Discussion**

The aim of the present study was to develop a psychometrically reliable and valid questionnaire covering all aspects of practical nutrition knowledge practices among wrestlers which could be used in future studies. The reliability of the final instrument was high. A few items which lacked consistency with the rest of the questionnaire were retained for the sake of content validity, but the internal reliability remained high. The test-retest reliability was also very good. As well as achieving statistical significance in terms of validity and reliability, the initial process by which the items were generated ensured that all aspects of the subject area were covered, and thus the content validity, though not statistically measurable, was undoubtedly high.

### **Conclusion**

This questionnaire was designed to assess nutrition knowledge and practices among wrestlers. The knowledge questionnaire had reasonable content-, face-, and construct validities and overall good reliability. It has also been found to be useful, easy to administer tool and in a format appealing to respondents. The questionnaire is expected to assist comprehensive data collection to create a profile of knowledge and practices among wrestlers of Maharashtra.

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*Variorum Multi-Disciplinary e-Research Journal*  
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