

An Abstract of the Thesis on

“A CRITICAL STUDY OF NUTRITIONAL KNOWLEDGE AND PRACTICES AMONG THE WRESTLERS IN MAHARASHTRA”

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. Considering the present scenario of wrestling culture in Maharashtra, the researcher is in a dilemma about ... *“Do the wrestlers have in depth knowledge of balanced diet required for them? Do they practice their knowledge of nutrition in their day to day practice or not?”* Perceiving these aspects the present researcher has undertaken this piece of research entitled, **"A Critical Study of Nutritional Knowledge and Practices among the Wrestlers in Maharashtra"**.

Objectives of the Study

This study was conducted with following objectives:

- To develop a standard test to measure Knowledge of Nutritional practices of the wrestlers in Maharashtra State.
- To assess the knowledge and practices regarding nutrition among the wrestlers in Maharashtra State.
- To find out caloric value of present diet of wrestlers in the State.
- To critically analyze proper nutrition requirements during the training and competition period and off season for wrestlers in Maharashtra.

Hypotheses

After reviewing the literature and on the basis of extensive experience, the researcher formulated hypotheses as follows:

- HO₁: Nutritional knowledge and practices among the wrestlers in Maharashtra may not be proper as per the requirement.

HO₂: There will be no difference in nutritional status of the wrestlers of different weight categories.

HO₃: Caloric value of present diet of wrestlers in the State may not be proper as per the requirement.

Significance of the Study

- The study may help to provide the nutritional knowledge among the wrestlers in Maharashtra.
- The study might provide the nutritional practices among the wrestlers in Maharashtra.
- The study may help to develop good food habits among the wrestlers in Maharashtra.
- The study may help to achieve high performance in wrestling competitions by taking care of proper diet and nutrition.
- The study may be of great help in understanding the nutritional knowledge & practices to coaches and concerned authorities of wrestling in the state of Maharashtra.
- The study may help to design balanced nutritional chart for various age and weight category wrestlers in Maharashtra.

METHODOLOGY

The present study was undertaken with a view to evaluate the nutrition knowledge and practices among wrestlers in Maharashtra. The standard procedure was followed to conduct this study, which is presented below:

Research Design

Since there was no inventory available to assess the knowledge of nutritional practices especially for wrestlers in Maharashtra, the present researcher developed a standard inventory in the first year. Further, in the next year a survey research was conducted by administering this inventory on a large population (20%) of wrestlers in Maharashtra to assess the real status of nutritional practices of the wrestlers residing in the state of Maharashtra. Thus, the present study is a developmental -cum- survey research.

Population

The researcher could locate the wrestlers of different weight categories (96+, 96, 84, 74, 66, 60, and 55 Kgs.) practicing in all the SAI Centers and adopted Akharas situated at Sangli, Kolhapur, Pune, Satara, Solapur, Aurangabad and Nashik in Maharashtra as population.

Method of Development of Inventory

The inventory “Knowledge of Nutrition and its practices for Wrestlers” has been developed considering three phases:

- Preliminary phase-I,
- Middle phase-II, and
- Final phase-III.

A) Methods of Preliminary Phase-I

The researcher first studied various aspects that were needed for preparation of questionnaires. The questionnaire on “Nutritional Knowledge and Practices for Wrestlers” was developed with four major dimensions viz., *general knowledge on nutrition, food, diet and vitamins/minerals* and was shown to experts in the field of physical education research and sports nutritionist. Primarily, the questionnaire had 80 questions. The questionnaire was modified by following standard procedures (Bhattacharya *et al.*, 1978). Considering this process, the questionnaire was sent to three renowned nutritionists and three psychologists in Pune city for modification in questions, if any. This was a 3-point scale i.e., each question has three alternative answers. Thus, the face validity of the questionnaire was maintained. The suggestions from these experts were incorporated and then the questionnaire (having 70 questions) was finalized for first try-out.

After modification, the questionnaire was administered on the small sample (40 wrestlers) on try-out basis. The researcher noted down the difficulties faced by the sample-subjects while filling up the questionnaire. The time taken by the sample-subjects was also noted. The environment to fill up the questionnaire was conducive.

The data, obtained from the sample questions, were analyzed for difficulties faced by the wrestlers during data collection, which were discussed with the panel of experts and modified the questionnaire accordingly. After one month is over, the questionnaire was again administered on the same sample and the test-retest reliability ($r=0.48$ to 0.65) ensured the inventory's reliability. Since opinions of many experts were incorporated, the questionnaires seem to have content validity. This ensures the preliminary form of the questionnaire.

B) Methods of Middle Phase-II

Now the questionnaire was administered on a large sample ($n=1120$) from the state of Maharashtra.

Sample

Data were collected randomly from a total 16 wrestling centres (i.e., SAI centre and adopted Akharas) situated in the state of Maharashtra. It is evident that ten male wrestlers from each weight category from every wrestling centre participated in this study (Table 3.1). Thus, the total participants (sample) in this survey were 1120 wrestlers. The distribution of the participants is presented in table 3.1.

Item Analysis was then performed (Guilford & Fruchter, 1973). The values of item difficulty and item discrimination of each question was analyzed. As per reference of Bhattacharyya *et al.*, (1977), the value of "item-difficulty-index (cP)" of each test-item lies in between the value 0.5 to 0.7 was accepted and the test-item bearing such value has been included into the test. The values of item-discrimination (ULI i.e., Upper-Lower Index) of each item lower than 0.33 were not included in the test (Bhattacharyya, *et al.*, 1977). Further, the split half reliability coefficient was then determined. For this, the scores of each item of each group were given serial numbers and they were then split into two halves. The first half contained the score of odd serial number and the second half contained the score of even serial numbers. The split half reliability of the Questionnaire was also determined statistically ($r=0.68$, $p<0.01$). Finally, the questionnaire was having 66 items/ questions.

C) Methods of Final Phase-III

After establishing the questionnaire's reliability and validity and finalizing the dimension-wise test items (questions), the norms have been developed by testing the normality of the data. Finally the norms have been graded considering Likert's Five points scale.

Method of Survey

Survey of the Wrestlers' "knowledge on nutrition and its practices" has been done by administering the newly developed questionnaire on seven hundred wrestlers (n=700) of different weight category from SAI centres and Akharas in Maharashtra. There were seven categories of wrestlers (120kg, 96 kg, 84 kg, 74 kg, 66 kg, 60 kg, 55 kg) and 160 wrestlers from each category were selected.

Variables and Tools used

This study considered only one variable i.e., status of nutritional knowledge and practices among wrestlers in Maharashtra. To assess the variable the researcher administered the newly developed tool "Knowledge of Nutrition and its practices" on the sample. The tool (i.e., questionnaire) was found reliable ($r=0.68$, $p<0.01$) and valid. The scoring was done in points.

Procedure

Firstly, the researcher has taken permission from authorities of Akharas for data collection. Further, consent from all the participants was taken prior to data collection.

The data were collected during April 2011 to June 2011. The subjects were requested to fill up the questionnaires in the presence of the present investigator. The researcher noted that the room atmosphere, where the questionnaire administered, was favourable and conducive. All the subjects were found very peaceful to respond each question in the questionnaires.

Statistical Analysis

a) For Development of the Inventory (questionnaire):

- Descriptive statistics was employed.
- Test-retest reliability of the preliminary form of the questionnaire was calculated.
- Item analysis was performed in terms of *item-difficulty and item discrimination*.
- Content validity and split half reliability were finally established for the questionnaire.

- Normality of the data was tested in terms of value of *skewness and kurtosis*. Then percentile norms were established. Finally, gradation of the data on the questionnaire was done on the basis of Likert's Five point scale.

b) For Analysis of Survey data:

- Descriptive statistics was applied to process the data.
- Percentage-wise analysis was employed to assess the status of Nutritional Knowledge and Practices for Wrestlers in Maharashtra.
- Further, Chi-Square test was done to find differences in the status of Nutritional Knowledge and Practices for Wrestlers belonging to different weight categories (96+, 96, 84, 74, 66, 60 and 55 Kilograms).
- t-test was then employed to find out the significant difference between required intake of calories and actual calorie intake of the wrestlers in the state of Maharashtra.

MAJOR FINDINGS

- The test on Wrestlers' knowledge on nutrition revealed a total 61 items representing four major dimensions. The test has content validity and reliability coefficient was 0.68 ($p < 0.01$). The norms established were gradable accordingly to Likert's five points scale viz., excellent knowledge, good knowledge, average knowledge, fair knowledge and poor knowledge.
- The survey study indicates that 72.83% of the wrestlers had below-average level of knowledge on nutrition and only 7.88% of them had above-average level. Chi square test indicates that the wrestlers of different weight categories also exhibited poor knowledge on nutrition and its practices. It seems majority of the wrestlers in Maharashtra do not possess proper knowledge on nutrition and its practices.

- Since the wrestlers had poor knowledge on nutrition, it is evident that their calorie intake is far from the required calorie. The result of t-test further confirmed the same.
- Almost all wrestlers are not taking pre workout meal.
- All wrestlers are taking excessive fat in diet.
- Nobody is taking Vitamin supplement which is very important.
- Almost all wrestlers delay the post workout meal more than 30 to 45 minutes.
- Wrestlers eat fruits / fruits Juice after meal, which is actually to be taken immediate after workout.
- Irregularity is observed in taking meal with special reference to time gap between two meals. Time gap between two meals is more than four hours.

CONCLUSION

This is a systematic investigation which warrants the following conclusions:

- The test on “Wrestlers’ knowledge on Nutrition,” as standardized in this study is reliable and valid. The norms as developed are gradable and would help to accurately assess the actual status of Wrestlers’ knowledge on nutrition.
- Majority of the wrestlers in Maharashtra do not possess proper knowledge on nutrition and its practices.
- Due to improper knowledge on nutrition, the Wrestlers of Maharashtra consume diet with excessive Calorie.

RECOMMENDATION

On the basis of the results and conclusion, this study made following recommendations:

- The knowledge-test on nutrition as developed in this study is recommended for assessing nutritional status and practices of the wrestlers in Maharashtra. This would without doubt help to enhance their performance.
- There is a need to have a strategy for developing awareness on nutrition and calorie intake among the wrestlers in Maharashtra.
- The wrestling coaches must update their own knowledge on nutrition and calorie intake so that the same should be imparted to the students of wrestling.
- Development of a standard knowledge-test on nutrition for the wrestlers of the country is recommended for further study.
- Since almost all Wrestlers are not taking pre workout meal, which is essentially required, it is recommended for the same to avoid muscle protein breakdown during training.
- The results revealed that wrestlers are taking excessive fat in diet that produces excessive calories, which in fact increase body fat leading to decrease in performance. It is therefore recommended to control the diet which contents fat and suggested for intake of required fat in diet.
- Since Vitamins are required for early recovery and to accelerated the energy metabolism and other enzymatic activity. It is therefore recommended to consume Vit 'B' in pre workout mea and Vit 'C' & 'E' in after workout meal.

- It is recommended that all wrestlers may consume post workout meal within 10 minutes after workout for early recovery.
- It is recommended that all wrestlers may eat fruits/fruit juice immediately after workout.
- The wrestlers are suggested to maintain the regularity [time gap] in between two meals. They should note that this gap should not be more than three to four hours.

SELECTED REFERENCES

- Al-Hawy, Y. A. E. (2000). *Boxing: theoretical bases and application*. Egypt: Al-Aziz Publishing, Zagazig.
- American College of Sports Medicine, American Dietetic Association, & Dietitians of Canada, (2000). Nutrition and athletic performance. *Medicine and Sport Science*, 32(12), 2130–2145.
- Barr, S. I., & Heaney, R. P. (1997). Changes in bone mineral density in male athletes. *Journal of the American Medical Association*, 277(1), 22–23.
- Cho, M., & Fryer, B. A. (1974). Nutritional knowledge of collegiate physical education majors. *Journal of the American Dietetic Association*, 65, 30–34.
- Corley, G., Demarest-Litchford, M., & Bazzarre, T. L. (1990). Nutrition knowledge and dietary practices of college coaches. *J Am Diet Assoc.*, 90(5), 705-709.
- Cotunga, N., Vickery, C. E., & McBee, S. (2005). Sports nutrition for young athletes. *J Sch Nurs.*, 21(6), 323-328.
- Cupisti, A., D'Alessandro, C., Castrogiovanni, S., Barale, A., & Morelli, E. (2002). Nutrition knowledge and dietary composition in Italian adolescent female athletes and non-athletes. *Int J Sport Nutr Exerc Metab.*, 12(2), 207-219.
- Froiland, K., Koszewski, W., Hingst, J., & Kopecky, L. (2004). Nutritional supplement use among college athletes and their sources of information. *International Journal of Sport Nutrition and Exercise Metabolism*, 14,104–120.
- Grandjean, A., Hursh, L. M., Majure, W. C., & Hanley, D. F. (1981). Nutrition knowledge and practices of college athletes. *Medicine and Science in Sports and Exercise*, 13(2), 82.

- Guilford, J. P., & Fruchter, B. (1973). *Fundamental statistics in psychology and education*. (New Delhi: McGraw Hill Book Co.), 135-157.
- Jonnalagadda, S. S., Rosenbloom, C. A., & Skinner, R. (2001). Dietary practices, attitudes, and physiological status of collegiate freshman football players. *Journal of Strength and Conditioning Research*, 15(4), 507–513.
- Kadous, S. A. (1993). *Scientific bases of boxing* (1Ed) Cairo, Egypt: Dar Al-Maaref, pp. 165--181.
- Kamlesh, M. L. (1986). *Methodology of research in physical education and sports*. (New Delhi: Metropolitan Book Co. Pvt Ltd.), 15-70.
- Kelkar, G., Subhadra, K., & Chengappa, R. K. (2006). Nutrition knowledge, attitude and practices of competitive Indian sportsmen. *Indian Journal of Nutrition and Dietetics*, 43(7), 293-304.
- Lakin, J. A., Steen, S. N., & Oppliger, R. A. (1990). Eating behaviors, weight loss methods, and nutrition practices among high school wrestlers. *Journal of Community Health Nursing*, 7(4), 223-234.
- Lemon, Peter. (2000). Beyond the zone: Protein needs of active individuals. *Journal of the American College of Nutrition*, 19(5), 513-521.
- Malinauskas, B. M., Overton, R. F., Cucchiara, A. J., Carpenter, A. B., & Corbett, A. B. (2007). Summer league college baseball players: Do dietary intake and barriers to eating healthy differ between game and non-game days? *The Sport Management and Related Topics Journal*, 3(2), 23–34.
- Mazier, M. J., & McLeod, S. L. (2007). University science students' knowledge of fats. *Can J Diet Pract Res.*, 68(3),154-159.
- McMurray, R. G., Proctor, C. R., & Wilson, W. L. (1991). Effect of caloric deficit and dietary manipulation on aerobic and anaerobic exercise. *Int J Sports Med*, 12(2), 167-172.
- Mish, F. (2001). *Merriam-Webster's collegiate dictionary* (10th ed.).Massachusetts: Merriam-Webster, Inc.
- Mosavi Jazayeri, S. M. H., & Amani, R. (2004). Nutritional knowledge and practices of bodybuilding trainers in Ahwaz, Iran. Pakistan. *The Journal of Nutrition*, 3(4), 228–231.
- Othman, H. E., Ghonaim, M. A., Al-Azab, D. M., & Shalan, A. M. (2000). *Boxing: Teaching, management and training*. Cairo, Egypt: Dar Al-Saada Press. 428-349.
- Perron, M., & Endres, J. (1985). Knowledge, attitudes, and dietary practices of female athletes. *Journal of the American Dietetic Association*, 85, 573–576.
- Perron, M., & Endres, J. (1985). Knowledge, attitudes, and dietary practices of female athletes. *Journal of the American Dietetic Association*, 85, 573–576.

- Roemmich, James. N. *et al.*, (1997). Weight loss and wrestling training: Effects on growth- related hormones. *Journal of Applied Physiology*, 15, 1760-1764.
- Roemmich, James. N. *et al.*, (1997). Weight loss and wrestling training: Effects on nutrition, growth, maturation, body composition, and strength. *Journal of Applied Physiology*, 15, 1751-1759.
- Rosenbloom, C. A., Jonnalagadda, S. S., & Skinner, R. (2002). Nutrition knowledge of collegiate athletes in a Division I National Collegiate Athletic Association institution. *Journal of the American Dietetic Association*, 102(3), 418-420.
- Schmalz, K. (1993). Nutritional beliefs and practices of adolescent athletes. *J Sch Nurs.*, 9(2), 18-22.
- Smith-Rockwell, M., Nickols-Richardson, S. M., & Thye, F. W. (2001). Nutrition knowledge, opinions, and practices of coaches and athletic trainers at a division I university. *Int J Sport Nutr Exerc Metab.*, 11(2), 174-185.
- Steen, S. N., & Brownell, K. D. (1990). Patterns of weight loss and regain in wrestlers: has the tradition changed? *Med Sci Sports Exerc*, 22(6), 762-768.
- Thompson, T. G., & Veneman, A. M. (2005). *Dietary Guidelines for Americans*. U.S. Department of Health and Human Services.
- Werblow, J. A., Fox, H. M., & Henneman, A. (1978). Nutritional knowledge, attitudes, and food patterns of women athletes. *J Am Diet Assoc.*, 73(3), 242-245.
- Werblow, J. A., Fox, H. M., & Henneman, A. (1978). Nutritional knowledge, attitudes, and food patterns of women athletes. *J Am Diet Assoc.*, 73(3), 242-245.
- Zawila, L. G., Steib, C. M., & Hoogenboom, B. (2003). The female collegiate cross-country runner: Nutritional knowledge and attitudes. *Journal of Athletic Training*, 38(1), 67-74.
- Zinn, C., Schofield, G., & Wall, C. (2005). Development of a psychometrically valid and reliable sports nutrition knowledge questionnaire. *J Sci Med Sport.*, 8(3), 346-351.