

## Health and Physical Fitness of Dance Performers and Yoga Practitioners

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### ABSTRACT

**Background:** The socio-economic transformation in India over the previous decade may have created a less active lifestyle and decline in fitness among the practitioners. **Objective:** This study seeks to present the data on the health and physical fitness of dance performers and yoga practitioners of Punjab, India. **Subjects and Methods:** In the present study subjects between the age group of 17 to 25 years were selected from the different colleges affiliated to Punjabi University Patiala of Punjab state, India, who have participated in dance with music and yoga at inter-college level. 80 males were selected (40 subjects were dance performers and 40 were yoga practitioners). The data was collected for speed (anaerobic ability), explosive strength, arm strength, abdominal strength, cardio-vascular endurance, trunk flexibility, blood pressure (systolic and diastolic) and pulse rate. **Results:** The significant improvement was observed in anaerobic ability (Speed), arm strength, endurance and pulse rate, where as it was non-significant in abdominal strength, flexibility, systolic blood pressure and diastolic blood pressure of dance performers and yoga practitioners. **Conclusion:** The study can be generalized that in order to enhance the speed and arm strength of the individuals the activities like dance performing can be suggested. Such activities are also advisable for the candidates lacking endurance and having blood pressure problems. Yoga and dance both are equally advisable to the people who want to increase their abdominal strength and flexibility, and control blood pressure problems. Suitable recommendation for young, adults and old, all age group people should be encouraged participating in such activities, so that everyone can have a sound health.

**Key words:** *Yoga, Dance, Physical Fitness, Exercise.*

**Yadav S. Health and physical fitness of dance performers and yoga practitioners. *Canad J Clin Nutr* 2013; 1 (2): 23-33**

**DOI:** <http://dx.doi.org/10.14206/canad.j.clin.nutr.2013.02.04>

### INTRODUCTION

Health-related physical fitness is typified by an ability to perform daily activities with vigor and is related to a low risk of chronic disease. Cardio-respiratory endurance, musculoskeletal fitness (muscular strength and endurance, flexibility), and optimal body composition are the measurable components of health-related fitness. Skill-related fitness, on the other hand, has

more to do with agility, balance, coordination, speed, power, and reaction time (sport skills) and has little relationship to health and disease prevention.

Fitness plays a vital role in the performance of all sports and team games. The world “Fitness” has been discussed and explained by physical educators, coaches and medical professional in numerous ways in relation to performance in games and sports and organic health. “The literature of Fitness” has variety of interpretations of the construct. Each one of the professionals stated above keeps in mind his own expectations from a human body and defines “Fitness” in his own way. Different terminologies like “Motor Fitness” “Physical Fitness” “Total Fitness” “General Fitness” “Athletic Fitness” “Organic Fitness” and “Health Related Physical Fitness” are in practice.

Fitness especially Motor Fitness is regarded as an essential component even if the term consists of highly skilled technically scored and experienced players. Motor Fitness is gauged by performance and the performance is based on many factors such as strength, endurance, power, speed, agility and flexibility. Some of the factors evidently are most dominant than other and thus have a higher relationship with motor fitness. Scientists and Physiologists have been of the view that anthropometric measurements and physical components of an athlete have a lot to do with his performance. More than the technical and tactics of a player or a team physical and physiological characteristics help him for better performance. Most of the games demand a higher level of speed, strength, endurance, flexibility, coordination and optimum fitness of the organism for higher performance (1).

Scientific study of exercise, physiology is becoming increasingly important with the growing realization of the relation of exercise to health. Field and laboratory observations on exercising the human subjects are being supplemented with physiological and bio-chemical studies on laboratory animals. With the result that many of the phenomena associated with acute and chronic exercise can now be explained at cellular and molecular levels (2). The number of components that they suffer displacement during about off exercise be large, they are evidently linked with one another in a pattern of inter locking controls. For examples, pulmonary ventilation, frequency of heartbeat and rise of blood pressure are each a part of exercise syndrome. Each environment and surface in a component may be regarded as a strain to which the physiological body subjected (3).

Music is a source of motivation and inspiration that is much valued within the realms of sport and exercise. Given the ubiquity of music in such environments, its application as a mild but perfectly legal ergogenic aid, has raised considerable interest among researchers over the last four decades (4-5).

Many individuals prefer to involve in dance with music and yoga while getting fit rather than engaging in fitness activities like running, cycling, or stair climbing. The competitive and social aspects of sports make them enjoyable for many and help promote long-lasting compliance (one of the greatest challenges in exercise training). Yoga is able to achieve oneself to be fit spiritually, morally, physically and mentally. It is essential to involve oneself in yogic exercises. Even West and other researchers in the year 2004 concluded that both dance and yoga decreased perceived stress and negative effects.

## **SUBJECTS AND METHODS**

**Study Design and Setting:** Simple random sampling technique was used to select the sample. The investigator visited to the Punjabi university Patiala and obtained the list of colleges which have participated in inter-college competition in dance performers and yoga practitioners. The subjects were randomly selected from the colleges (Table 1). Thus, 80 males were selected (40 subjects were dance performers and 40 were yoga practitioners). This study was approved by Ministry of Health, Punjab, India.

**Sampling:** In the present study subjects between the age group of 17 to 25 years were selected from the different colleges affiliated to Punjabi University Patiala of Punjab state who have participated in dance with music and yoga at inter-college level.

**Study Tools:** The investigator used the tools for the health related fitness and purpose of data collection for this study was speed and explosive strength, arm strength, abdominal strength, cardio-vascular, endurance, trunk flexibility, blood pressure (systolic and diastolic) and pulse rate (6).

The 140 up-tempo tracks for dancing with music were selected. The tracks were then recorded from compact discs onto a mini-disc (SonyMDW74CRG) using a hi-fi system (Sony CMT-CP505MD). A DJ mixer unit (Numark 940 XL) and dual deck player (Numark 8868) were used. The author then recorded 90 sec excerpts from the remaining 32 tracks with each excerpt including at least one verse and one chorus (7).

The subjects also underwent yogic training through training programme and supervise by the researcher. The subjects performing asana for health related fitness that includes Poornabhujangasana, Dhanurasana, Baddhapadmasana, Kukkut asana and Halasana.

**Statistical Analysis:** Statistical technique of t-ratio was applied to study the significance of difference among dance performers and yoga practitioners with respect to selected physical and physiological variables i.e. speed, strength, endurance, flexibility, blood pressure and pulse rate.

## RESULTS

The study was conducted to determine the health and physical fitness of dance performer with music and yoga practitioners. The statistical analysis of data collected on eighty (N=80) subjects. The results are presented in table 1 and 2. The graphical representation of responses has been exhibited in figure-1. For each of the chosen variable, the results pertaining to significant difference, if any, between dance performer with music and yoga practitioner groups were assessed by “t” test (8).

Table 2 shows that the mean of anaerobic ability (Speed) of dance performers and yoga practitioners was 6.55 and 7.64, respectively. The “t” value in case of anaerobic ability (Speed) of dance performers and yoga practitioners was 14.72. Since  $\text{cal. } t (=14.72) > \text{tab } t_{0.05 (78)} (=2.64)$ ,  $H_0$  (null hypothesis) is rejected at 0.05 level of significance. The mean of arm strength of dance performers and yoga practitioners was 24.2 and 17.4, respectively. The “t” value in case of arm strength of dance performers and yoga practitioners was 12.23. Since  $\text{cal. } t (=12.23) > \text{tab } t_{0.05 (78)} (=2.64)$ ,  $H_0$  (null hypothesis) is rejected at 0.05 level of significance.

The mean of abdominal strength of dance performers and yoga practitioners was 27.5 and 26.9, respectively. The “t” value in case of abdominal strength of dance performers and yoga practitioners was 0.83. Since  $\text{cal. } t (=0.83) < \text{tab } t_{0.05 (78)} (=2.64)$ ,  $H_0$  (null hypothesis) is accepted at 0.05 level of significance. The mean of endurance of dance performers and yoga practitioners was 1.39 and 1.51, respectively. The “t” value in case of endurance of dance performers and yoga practitioners was 2.65. Since  $\text{cal. } t (=2.65) > \text{tab } t_{0.05 (78)} (=2.64)$ ,  $H_0$  (null hypothesis) is rejected at .05 level of significance.

The mean of flexibility of dance performers and yoga practitioners was 9.95 and 10.0, respectively. The “t” value in case of flexibility of dance performers and yoga practitioners

was 0.86. Since  $\text{cal. } t (=0.86) < \text{tab } t 0.05 (78) (=2.64)$ ,  $H_0$  (null hypothesis) is accepted at 0.05 level of significance. The mean of systolic blood pressure of dance performers and yoga practitioners was 122.0 and 121.5, respectively. The “ $t$ ” value in case of systolic blood pressure of dance performers and yoga practitioners was 1.30. Since  $\text{cal. } t (=1.30) < \text{tab } t 0.05 (78) (=2.64)$ ,  $H_0$  (null hypothesis) is accepted at 0.05 level of significance.

The mean of pulse rate of dance performers and yoga practitioners was 64.6 and 72.1, respectively. The “ $t$ ” value in case of pulse rate of dance performers and yoga practitioners was 14.70. Since  $\text{cal. } t (=14.70) > \text{tab } t 0.05 (78) (=2.64)$ ,  $H_0$  (null hypothesis) is rejected at 0.05 level of significance. Thus, the health and physical fitness of dance performers and yoga practitioners showed significant improvement in anaerobic ability (Speed), arm strength, endurance and pulse rate and insignificant result in abdominal strength, flexibility, systolic blood pressure and diastolic blood pressure. As per the study the above remark can be given at 95% confidence.

## DISCUSSION

The present study evaluates the health-related fitness of dance performers and yoga practitioners in Punjab, India. Today the sports persons are trained scientifically with the latest training methods and sophisticated instruments for higher performance improvement in different sphere of sports. (9). Physical activity has been recognized as an important tool for prevention of diseases in developed countries (10-12). Physical performance ability is commonly referred to as physical fitness, an umbrella concept covering a series of qualities related to how well an individual performs physical activity (13). Physical activity is defined as any body movement produced by the skeletal muscles resulting in energy expenditure (EE) (14). It is thus clear that EE during physical activity represents the most important source of variation in average daily metabolic rate between individuals (14). The findings that dance performers and yoga practitioners have higher levels of physical fitness in anaerobic ability (Speed), arm strength, endurance and pulse rate, agree with previous literatures (15-20). Whether the results of the present assessments of these fitness variables are judged to be poor, fair, good or excellent (on the basis of some standards and norms), they are manifestations of the physical activity levels. Enhanced fitness performance mostly reflects the level of habitual physical activity. Indeed, studies in children have indicated that high physical fitness scores, especially high levels of cardio-respiratory fitness are associated with

increased levels of physical activity (21-22). However, a significant amount of fitness is explained by heredity (23). This accounts for less than 30% of the differences between people (24). The significant importance of these physical performance measures is related to the development of gross motor skills, improved quality of life and social well-being. Sport activities and physical education classes are essential components of a physical and health related fitness development. The study fills a research gap by examining an under studied region of the country and by assessing several components of fitness of dance performers and yoga practitioners in Punjab, India. On the other hand, the result of this study will be helpful to the health department, educational planners, further researchers and teachers in providing awareness about the various ways through which people can maintain good health.

As both the activities are flexibility based so dance performers and yoga practitioners were found to have equal score in the flexibility test. The blood pressure of dance performers and yoga practitioners was not different significantly; it was nearly same in systolic as well as diastolic readings. As we all know that the more endurance one has, the lower the pulse rate comes so pulse rate were found better in dance performers than the yoga practitioners.

### **CONCLUSIONS**

The physical variable i.e. speed was found better in dance performers than the yoga practitioners the probable reason may be that one has to perform dance at a faster pace than yoga. Arm strength was found better in dance performers than the yoga practitioners and the difference between abdominal strength among dance performers and yoga practitioners was not significant. Endurance was found better in dance performers than the yoga practitioners.

It can be generalized that in order to enhance the speed and arm strength of the individuals the activities like dance performing can be suggested. Such activities are also advisable for the candidates lacking endurance and having blood pressure problems. Dance and Yoga both are equally advisable to the people who want to increase their abdominal strength and flexibility, and control blood pressure problems.

### **ACKNOWLEDGMENTS**

The author would like to thank to all the participants, technicians and physicians for their kind supports in data collection and laboratory analysis. The author also thank to all the supportive staff for contributing in the study.

## REFERENCES

1. Johnson WR and Buskirk ER. Science and Medicine of Exercise and Sports. New York: Harper & Brothers Publications 1974; 21:26-31.
2. Morehouse LE and Miller AT. Physiology of Exercise. St.Louis: The C.V. Mosby Company 1976; 56:5-12.
3. Adolph EF. Some Physiological Regulation Illustrated in Exercise. In Science and Medicine of Exercise and Sports. 5<sup>th</sup> edition. New York: Harper & Row Publishers 1974; 32:46-54.
4. Karageorghis CI and Terry PC. The psychophysical effects of music in sport and exercise: A review. Journal of Sport Behavior 1997; 2: 54-68.
5. Lucaccini LF and Kreit LH. Music. In Ergogenic Aids and Muscular Performance. Edited by W.P. Morgan, New York: Academic Press 1972; 63: 240-245.
6. Bailey AMD. Menopause and physical fitness. The North American Menopause Society 2009; 16: 856–857.
7. Gluch P. The use of music in preparing for 1 sport performance. Contemporary Thought 1993; 2:33-53.
8. Edwin R. Effects of a plyometrics intervention programme on sprint performance. J Strength & Conditioning Res 2000; 3: 295-301.
9. Peter Arnold. Education, Physical Education and Personality Development. London: Heinemann, Educational Books Ltd. 1972; 72: 114-121.
10. Haskell WL. Physical activity and disease prevention: past, present and future: a personal perspective. Exerc Sports Sci Rev 2003; 67: 109-110.
11. Mckechnie R, Mosca L. Physical activity and coronary heart disease: prevention and effect on risk factors. Cardiol Rev 2003; 11: 21- 55.
12. Monyeki MA. Health and physical fitness status of rural primary school children living in Ellisras, South Africa: The Ellisras Longitudinal Study. Doctoral Thesis, Vrije University, Amsterdam, The Netherland 2006.
13. Astrand P, Podahl K, Dahl HA, Stromme SB. Textbook of work physiology: physiological bases of exercise (4th ed.). Champaign, Illinois: Human Kinetics 2003.
14. Lefevre J, Philippaerts R, Delvaux K, Thomas M, Claessens AL, Lysens R, Renson R, Vanden EB, Vanreusel B, Beunen G. Relation between cardiovascular risk factors at



- adult age, and physical activity during youth and adulthood: the Leuven Longitudinal Study on Lifestyle, Fitness and Health. *Int J Sports Med* 2002; 23: 32-38.
15. Prista A, Marques AT, Maia AJR. Relationship between physical activity, socio-economic status, and physical fitness of 8-15 years old youth from Mozambique. *Am J Hum Biol* 1997; 9: 449-457.
  16. Benefice E. Physical activity, cardiorespiratory fitness, motor performance, and growth of Senegalese pre-adolescents. *Am. J.Hum. Biol* 1993; 5: 653-667.
  17. Monyeki MA, Kemper HCG, Twisk JWR, Monyeki KD. Anthropometric indicators of nutritional status and physical fitness of Ellisoras rural primary school children, South Africa *Med Sportiva* 2003; 7: 93-102.
  18. Pate RR, Wang CY, Dowda M, Farrell SW, O'Neill JR. Cardiorespiratory fitness levels among US youth 12 to 19 years of age: findings from the 1999-2002 National Health and Nutrition Examination Survey. *Arch Pediatr Adolesc Med* 2006; 160: 1005-1012.
  19. Baquet G, Twisk JW, Kemper HC, Van Praagh E, Berthoin S. Longitudinal follow-up of fitness during childhood: interaction with physical activity. *Am J Hum Biol* 2006; 18: 51-58.
  20. Mikkelsen L, Kaprio J, Kautiainen H, Kujala U, Mikkelsen M, Nupponen H. School fitness tests as predictors of adult health-related fitness. *Am J Hum Biol* 2006; 18: 18342-18359.
  21. Bailey DA. Exercise, fitness and physical education for the growing child: a concern. *Can J Public Health* 1973; 64: 421-430.
  22. Huang YC, Malina RM. Physical activity and health-related physical fitness in Taiwanese adolescents. *J Physiol Anthropol Appl Hum Sci* 2002; 21:11-19.
  23. Bouchard C, Dionne FT, Simoneau JA, Boulay MR. Genetics of aerobic and anaerobic performances. In: Holloszy JO (Ed) *Exercise and sport sciences reviews*. Baltimore: Williams and Wilkins 1992:27-58.
  24. Bouchard C, Perusse L, Leblanc C, Tremblay A, Theriault G. Inheritance of the amount and distribution of human body fat. *Int J Obes* 1988; 12: 205-215.



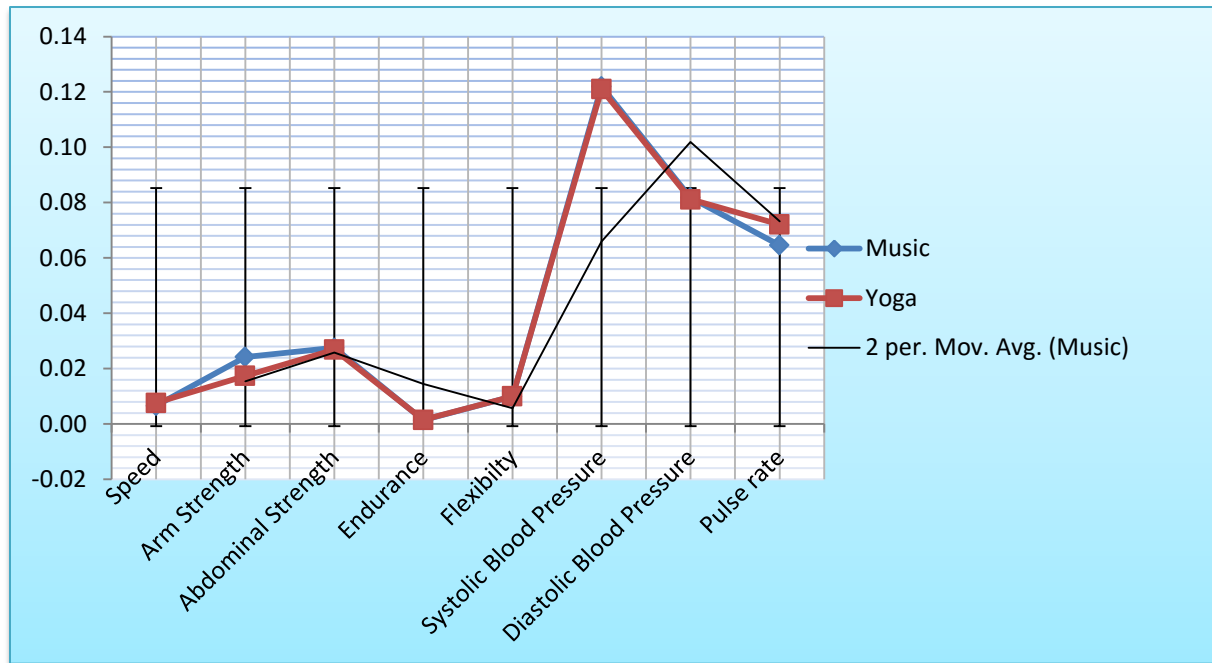
**Table 1: A List of Colleges Presenting the Distribution of Subjects per Dance and Yoga**

<b>Name of Colleges</b>	<b>Dance Performers</b>	<b>Yoga Practitioners</b>
P. M. N. College, Rajpura	8	13
Guru Nanak National College, Budhlada	0	11
Govt. College, Mohali	0	9
Tibba Nangal	0	7
S.G.T.B. Khalsa College, Anandpur Sahib	8	0
Punjabi University, Campus	8	0
DeshBhagat College, Mandi Gobindgarh	8	0
P.G.S. Govt. College of Physical Education, Patiala	8	0

**Table 2: Mean, Standard Deviation and ‘t’ Value of Health Related Fitness Variables of Dance Performers and Yoga Practitioners**

<b>Group</b>	<b>Variables</b>	<b>Number</b>	<b>Mean</b>	<b>S.D.</b>	<b>‘t’ Value</b>
Music Yoga	Speed	40 40	6.55 7.64	0.31 0.25	<b>14.72*</b>
Music Yoga	Arm Strength	40 40	24.2 17.4	2.73 2.18	<b>12.23*</b>
Music Yoga	Abdominal Strength	40 40	27.5 26.9	3.52 3.40	<b>0.83</b>
Music with dance Yoga	Endurance	40 40	1.39 1.51	0.031 0.033	<b>2.65*</b>
Music with dance Yoga	Flexibility	40 40	9.95 10	0.18 0	<b>0.86</b>
Music with dance Yoga	Systolic Blood Pressure	40 40	122.025 121.55	1.59 1.66	<b>1.30</b>
Music with dance Yoga	Diastolic Blood Pressure	40 40	81.82 81.15	1.44 1.62	<b>1.96</b>
Music with dance Yoga	Pulse rate	40 40	64.6 72.1	2.42 2.10	<b>14.70*</b>

**\*Significant at 0.05 level of confidence.**



**Figure 1. Graphical Representation of the Comparison of the Means of the Health Related Fitness Variables of the Dance Performers and Yoga Practitioners**