International Journal of Applied Research 2018; 4(8): 124-128

ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2018; 4(8): 124-128
www.allresearchjournal.com
Received: 01-06-2018
Accepted: 03-07-2018

Dr. Suresh B Patil
Asst. Professor of Physical Education, College of Horticulture Munirabad, Tq-Dist-Koppal, Karnataka, India

Prakash Meti
Director of Physical Education, S.S.B.B.M Arts, Commerce and Science College, Badami, Karnataka, India

Vithal D Metri
Physical Education, Tq-Mudhol, Dist-Bagalkot, Karnataka. India

Correspondence
Dr. Suresh B Patil
Asst. Professor of Physical Education, College of Horticulture Munirabad, Tq-Dist-Koppal, Karnataka, India

The purpose of the study was to compare the physical fitness components of elite swimmers and non-swimmers Karnataka university dharwad

Dr. Suresh B Patil, Prakash Meti and Vithal D Metri

Abstract
The purpose of the study was to compare the physical fitness components of elite swimmers and non swimmers. 10 elite swimmers and 10 non swimmers of Karnataka University Dharwad. The age groups of the subjects were between 18 to 25 years. The tests conducted are vertical jump, broad jump, and half squat. Then the data was analyzed with reference to the objectives and hypotheses by using independent t-test to find out the difference between elite swimmers and non-simmers by using SPSS 11.0 statistical software and the results obtained there by have been interpreted.

Keywords: Physical fitness components of elite swimmers and non-swimmers. the tests conducted are vertical jumps, broad jump

Introduction
Swimming is a worldwide and popular sport, where you can participate at any level. Some enjoy the sport for fitness, some for recreation purposes while others compete. Competitive swimmers may cover 10,000 to 14,000 meter a day, 6 to 7 days a week. Becoming a successful swimmer takes time, skills, hard training and a love for the wet element. Different techniques are used - front crawl, butterfly, backstroke and breaststroke - and preferable distance varies. Swimming events rage from 50m takes 22-26 sec. and 1500m takes 15-17 min. Open-water or long-distance may range between 1 km 10-12 min. to 25 km 5-6 hrs. Shoulder problems and injuries are common in swimming, due to high repetition rate, extreme range of motion and the force required for propulsion. However, swimming is a very aerobic activity and enables people with musculoskeletal problems to train, and avoid impact forces like in closed chain activities.

Training Principles
In order to improve your strength, you must follow a set of training principles, which apply to improving all disciplines of fitness:

Overload
The overload principle states that in order to improve you must do more than you have before. For example, if you continue to lift the same weight, with the same reps, your strength will stay the same. To improve, you should either increase the weight being lifted, or the number of reps you perform.

Specificity
If you are training for a specific sport, you should train the muscles which are heavily relied upon and also in the same way in which they will be used. For example, a rugby player will need explosive strength and power, whereas a marathon runner would need strength endurance.

Reversibility
This principle states that if you stop training, the benefits gained will be reversed. Basically use it or loose it! Even if you have a two week holiday for example, you will notice a difference and should recommence training a weight below where you left off.

Variance
Varying your training will help to keep your motivation and challenge your body in different ways. Remember a change is as good as a rest!

Rest
You need enough rest to allow your muscles to recover. If you don't get enough rest you may be overtraining and you will not see the benefits. If you are new to weight training you should aim to train at least twice a week and no more than every other day. People with experience of weight training may train 5 days a week, but will never train the same muscle group on consecutive days. Remember, all of the adaptations mentioned below occur when we are resting!
The methods of training the motor qualities by understanding the importance of specificity of the game, the recruitment of different methods, means & forms of training in swimming are interval training programme designed to develop strength endurance, general & basic endurance along with circuit training. Acrobatic training programme is designed to develop agility, flexibility, speed of body movements and dynamic balance. Further station training, set training are used to develop the maximum and explosive strength with the help of repetition method.
Sports training for juniors cover the training of beginners and more advanced learners. It begins as early in life as possible and constitutes and independent phase of training, in the course of which the stress in training shifts from training of beginners to the top, advanced, further preparing young players for the attainment of highest level to reach the efficiency and creating a stable base of co-ordination and condition of physical fitness. Advanced training starts between the age of 13 to 14 and ends at the age of 16 to 17, this information concerning the sequence of phases for junior training programme based on practical experience and training work and the process of biological development of children. The chances of success are mainly good in sports like swimming in which jumping ability in start plays dominant role in better start and winning the event.
Gambetta reveals that during the majority of resistance training programs, most of the time and effort is spent on the upper left (high force, slow velocity area) of the force velocity curve. However, most athletic performances occur on the lower right of the curve (low force, high velocity) where powerful movement is the priority. He suggests that training should be based upon increasing optimum rather than maximum strength as optimum strength training increases performance whilst maximum strength increases force. Further various studies on isokinetic testing and training methods have found that strength increases are specific to the velocity at which one trains .This suggests that resistance training should be performed at a high speed if explosive power is to be developed.
Bosch studied the effect of leg strength training upon the execution of the vertical jump. For this study subject trained 3 times weekly performing leg squat exercises to position where the upper legs were parallel with the floor, followed by the return to an erect position. The experimental subjects (N=24) exercised with weight on their shoulders while the control subjects (N=24) exercised without weights. The vertical jumping height was measured and a leg dynamometer measured isometric leg strength. A significant improvement in both sergeant jump and leg strength was showed for the experimental subjects. The control group did not improve in either test.

Hypothesis
1. There is no significant difference between elite swimmers and non-swimmers with respect to their vertical jump scores
2. There is no significant difference between elite swimmers and non-swimmers with respect to their broad jump scores.
3. There is no significant difference between elite swimmers and non-swimmers with respect to their half squat scores.

Limitations
1. During the test motivational techniques were not used it is also considered one of the limitation of the study.
2. Performance given by the subjects was considered on one of the limitation of the study.

Delimitation
1. The study was delimited on 10 male elite swimmers and 10 male non swimmers.
2. Further the study was delimited on 18-25 years age group students.
3. The study was further delimited on karnatak university dharwad students.
4. Further the study is delimited on explosive power of lower limbs.

Definition of terms
Exercise scientists have identified nine elements that comprise the definition of fitness. The following lists each of the nine elements and an example of how they are used:

Strength
The extent to which muscles can exert force by contracting against resistance (holding or restraining an object or person)

Power
The ability to exert maximum muscular contraction instantly in an explosive burst of movements (lumping or sprint starting)

Agility
The ability to perform a series of explosive power movements in rapid succession in opposing directions (zig zag running or cutting movements)

Balance
The ability to control the body's position, either stationary (eg: Hand stand) or while moving (eg:Diving stunt).

Flexibility
The ability to achieve an extended range of motion without being impeded by excess tissue, i.e., fat or muscle (executing a leg split).

Local muscle endurance
A single muscle's ability to perform sustained work (Swimming, cycling or rowing).

Cardiovascular endurance
The heart's ability to deliver blood to working muscles and their ability to use it (marathon swimming).

Strength endurance
A muscle's ability to perform a maximum contracture time after time (continuous explosive action in swimming)

Co-ordination
The ability to integrate the above listed components so that effective movements are achieved. Of all the nine elements of fitness, strength and cardiac respiratory qualities are the most important to develop because they enhance all the other components of the conditioning equation.

Study
- This study will help to compare the order to dominance of explosive power in lower limbs of elite swimmers and non swimmers.
- This study will be a guide to coaches and physical education director for picking up the talented persons for swimming according to requirements.
- It may help in deterring the players, weak in particular components.

Methodology
The purpose of the study was to compare the explosive power in lower limbs of elite swimmers and non swimmers. To execute the investigation, the investigator selected 10 male elite swimmers and 10 male non swimmers from Karnataka University Dharwad. The age of the subjects was 18-25 years. To test the explosive power in lower limbs vertical jump, broad jump and half squat were used for measuring the physical fitness. Prior to start of the experiments the subjects were properly educated to perform the test properly. The clear instructions were given by the researcher that is how to jump. The training has given by the investigator through demonstration and explanation

Vertical Jump
Purpose: To Measure the explosive power of the lower limbs.

Equipments: Measuring tape, wall

Description
The Subject is made to stand near the wall by stretching his right hand straight up measurement is taken that is standing reach. Then the subject is asked to jump up as high as possible, 3 chances are given the best jump is noted down. Then the jumped reading is been subtracted from the standing reach. We well get the absolute jump of an individual.

Broad Jump
Purpose: To Measure the explosive power of the lower limbs.

Equipments: Measuring tape, plain surface

Description
The subject takes a stance of shoulder width apart without touching the marked line. By swinging both the arms and by bending the knees he jumped or leaps forward as far as possible. Measurement is been taken from the starting line to the nearest point of the landing foot. i.e. heel. Among the three jumps the best jump is been recorded.

Half Squat
Purpose: To Measure the explosive power of the lower limbs.

Equipments: Stop watch, card board

Description
On a given whistle the subject takes a position of a half squat as if he is sitting on a chair. Upper body should be straight and knee should be bend at 90* without taking the support of the same hands he should try to maintain the same position. The time keeper stops the time when the subject gives up the position of half squat.
Dat However valid, reliable and adequate the data may be, it does not serve any useful purpose unless it is carefully processed, systematically classified and tabulated, scientifically analyzed, intelligently interpreted and rationally concluded.
After the data had been collected, it was processed and tabulated using Microsoft Excel - 2000 Software. The data collected on vertical jump, broad jump and half squat for elite swimmers and non-simmers. The main purpose of the study was "A comparative study on explosive power in lower limbs for elite swimmers and non-simmers". Then the data were analyzed with reference to the objectives and hypotheses by using independent t-test to find out the difference between elite swimmers and non-simmers with respect to vertical jump, broad jump and half squat by using SPSS 11.0 statistical software and the results obtained there by have been interpreted.
The level of significance set at 0.05% level of significance was considered to reject or accept the null hypothesis. On the basis of objectives the following hypotheses were formed

Hypothesis: There is no significant difference between elite swimmers and non-swimmers with respect to their vertical jump scores
To achieve this hypothesis, the t-test was applied and the results are presented in the following table.

Table 1: Results of t-test between elite swimmers and non-swimmers with respect to vertical jump scores

Group	n	Mean	SD	t-value	p-value	Signi.
Swimmers	10	45.4000	6.2574	3.5253	0.0024	S
non-swimmers	10	36.6000	4.8120			

From the results of the above table, we clearly seen that, a significant difference was observed between elite swimmers and non-swimmers with respect to vertical jump scores (t=3.5253, $p<0.05$) at 0.05% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the elite swimmers have significant higher vertical jump scores (mean=45.4000) as non-swimmers (mean=36.6000). The mean and SD scores of vertical jump is also presented in the following figure 1.

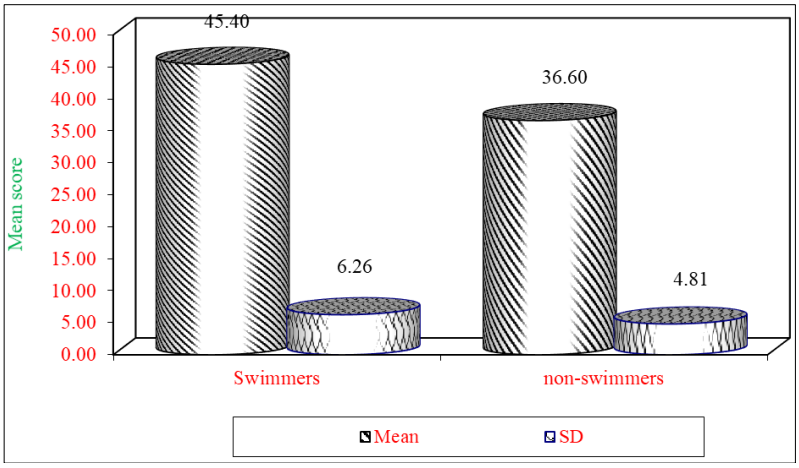

Fig 1: Comparison of elite swimmers and non-swimmers with respect to vertical jump scores

Hypothesis: There is no significant difference between elite swimmers and non-swimmers with respect to their broad jump scores

To achieve this hypothesis, the t-test was applied and the results are presented in the following table.

Table 2: Results of t-test between elite swimmers and non-swimmers with respect to broad jump scores

Group	n	Mean	SD	t-value	p-value	Signi.
Swimmers	10	2.7050	0.0784	2.2258	0.0390	S
non-swimmers	10	2.6360	0.0589			

From the results of the above table, we clearly seen that, a significant difference was observed between elite swimmers and non-swimmers with respect to broad jump scores (t=2.2258, p<0.05) at 0.05% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the elite swimmers have significant higher broad jump scores (mean=2.7050) as non-swimmers (mean=2.6360). The mean and SD scores of broad jump is also presented in the following figure 2.

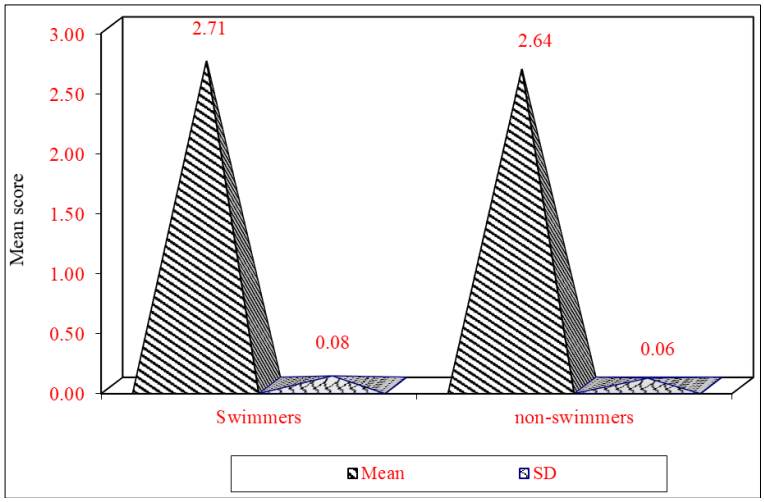

Fig 2: Comparison of elite swimmers and non-swimmers with respect to broad jump scores

Hypothesis: There is no significant difference between elite swimmers and non-swimmers with respect to their half squat scores to achieve this hypothesis, the t-test was applied and the results are presented in the following table.

Table 3: Results of t-test between elite swimmers and non-swimmers with respect to half squat scores

Group	n	Mean	SD	t-value	p-value	Signi.
Swimmers	10	1.9720	0.5388	1.1502	0.2651	NS
non-swimmers	10	1.5480	1.0337			

From the results of the above table, we clearly seen that, a non significant difference was observed between elite swimmers and non-swimmers with respect to half squat scores (t=1.1502, p>0.05) at 0.05% level of significance. Hence, the null hypothesis is accepted and alternative hypothesis is rejected. It means that, the elite swimmers (mean=1.9720) and non-swimmers (mean=1.5480) have similar half squat scores. The mean and SD scores of half squat is also presented in the following figure 3.

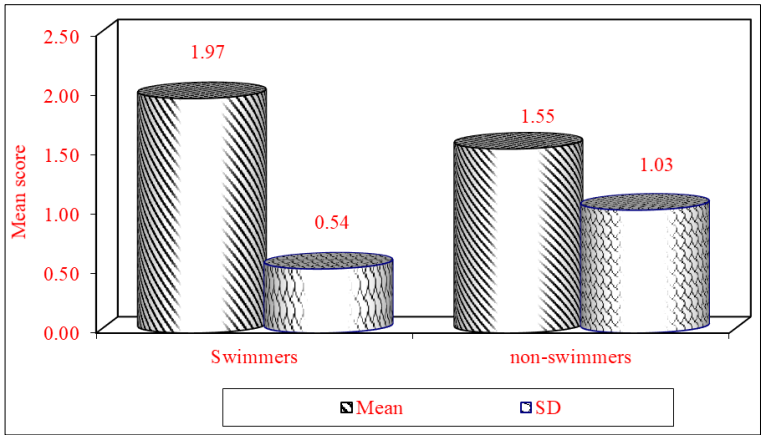

Fig 3: Comparison of elite swimmers and non-swimmers with respect to half squat scores

Hypothesis: There is no significant relationship between vertical jump, broad jump and half squat scores of swimmers and non-swimmers

To achieve this hypothesis, the Karl Pearson's correlation coefficient technique has been applied and the results are presented in the following table

Table 4: Results of Karl Pearson's correlation coefficient between vertical jump, broad jump and half squat scores of swimmers and non-swimmers

Group	variable	Vertical jump	Broad jump	Half squat
Non-swimmers	Vertical jump	1.0000		
	Broad jump	0.4209	1.0000	
	Half squat	0.4950	0.3062	1.0000
Swimmers	Vertical jump	1.0000		
	Broad jump	0.8567*	1.0000	
	Half squat	0.7053*	0.8001*	1.0000

*Significant at 0.05% level of significance ($p<0.05$)

From the results of the above table we seen that

1. A positive and non-significant relationship was observed between vertical jump and broad jump (r=0.4209, p>0.05), vertical jump and half squat (r=0.4950, p>0.05) & broad jump and half squat (r=0.4950, p>0.05) scores of non swimmers at 0.05% level of significance. Hence, the null hypothesis is accepted and alterative hypothesis is rejected.
2. A positive and significant relationship was observed between vertical jump and broad jump (r=0.8567, $p<0.05$), vertical jump and half squat (r=0.7053, $p<0.05$) & broad jump and half squat (r=0.8001, $p<0.05$) scores of swimmers at 0.05% level of significance. Hence, the null hypothesis is rejected and alterative hypothesis is accepted. It means that, the vertical, broad jump and half squat scores increases with increase in each other.

A significant difference was observed between elite swimmers and non-swimmers with respect to vertical jump scores A significant difference was observed between elite swimmers and non-swimmers with respect to broad jump scores A non significant difference was observed between elite swimmers and non-swimmers with respect to half squat scores A positive and non-significant relationship was observed between vertical jump and broad jump, vertical jump and half squat & broad jump and half squat. A positive and significant relationship was observed between vertical jump and broad jump, vertical jump and half squat & broad jump and half squat scores of swimmers.

Conclusion

The elite swimmers have significant higher vertical jump scores as compared to non-swimmers The elite swimmers have significant higher broad jump scores as compared to non-swimmers The elite swimmers and non-swimmers have similar half squat scores. The vertical, broad jump and half squat scores of swimmers increases among each other this study may also conduct on athletes and non-athletes. This study can also conducted on two different games. The study can also be conducted on professionals and non-professionals. Similar study can also be conducted on upper limbs. Similar study can also be conducted on various age groups. This study also helps to know the fitness level of an individual. This study also helps coaches, athletes, and physical instructors.

References

1. Anna EG. Fitness of fours of grade children research quarterly, 29:274.
2. Bryant JC. A comparison of father and sons in physical ability. Research quarterly. 31:13.
3. Charles C. Wilson laying foundation for physical fitness The Journal of Health physical education and recreation. 12:385.
4. Doncash Scaton. Basic Book of sports (Engles wood Clifts, N.T. Prentice Hall Inc.
5. Haward Knuttgen. Comparison of fitness in Danish and American school children. Research quarterly. 32:190.
6. Maricia Hart E, Clayton T. Shay. Relation between physical fitness and academic success. Research quarterly. 35:443.
7. Nameka Ikeda. Comparison of physical fitness of children in Iowa, U.S.A and Tokyo, Japan. Research Quarterly. 1962; 33:541.
8. Lecon Smith L. Relationship between explosive strength and performance in vertical jump. Research Quarterly. 1961; 50:32.