

Upper Limb Fitness Testing in Gymnasium Going People

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Abstract

Introduction – Fitness is important for all. To reduce the incidence of injuries in the gymnasium going people, especially in weight lifters, proper training should be given. For giving proper training, proper musculoskeletal assessment is required. This study is an effort to access various components of fitness in young gym going people.

Methodology & Results – 50 gymnasium going males with minimum 3 months of gymnasium training and age 18-24 years participated in present observational study. Upper limb muscular strength and muscular endurance were recorded using bench press and push up test. Also for flexibility grading, shoulder wrist elevation test was done.

For upper limb maximum participants have shown good muscular strength and above average muscular endurance though flexibility was found average only.

Conclusion - The general muscular fitness was seen in the average category in young gym going people.

Key words – Strength, Endurance, Flexibility, Upper limb injury

Introduction

Fitness is the condition of being physically fit and healthy. It is the quality of being suitable to fulfill a task. Fitness is far more than simply exercising on a consistent basis. With variety of components, there are many ways to measure the same. Demand for working out is increasing rapidly. Working out can reduce stress and boost the body's ability to deal with existing mental tension. Lower risk of coronary artery disease, hypertension, osteoporosis, diabetes, and many other diseases will be associated with regular physical activity¹. Sedentary people with good physical fitness are at a lower risk of cardiovascular diseases compared to those with less physical fitness². Similarly, significantly less

sickness absence³ and the capability to produce a higher quality of work⁴ can be seen in the physically fit people.

The activities performed by the upper limb in the gymnasium are pushups, pull ups, bench press; exercises for the chest, triceps, biceps, etc. For lower limbs squats with and without weights, leg press, hams, quads, calf's, etc. are done. Also abdominal strengthening, indoor cycling, treadmill etc. are part of gymnasium exercises. There are limited studies conducted to investigate injuries that has been suffered in gymnasium⁵. Also most focus only on describing the types of injuries sustained⁶ or the rate/frequency with which they occur⁵ The most common injuries during the workout seen are wrist sprain or dislocation, shoulder injuries⁷, muscle pull or strain, knee injuries, ankle sprain. Commonly the injuries are seen in the upper limb⁸. A study conducted by Shannon Gray showed that 45.1% of the injuries reported were of upper limb in weight lifters in the age group of 15-24 years and in male participants mostly (78%)⁹.

In another study conducted by Carman Quatman, they stated that the mechanism of injury was considered non-accidental if it resulted from exertion (sprain/strain,

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fatigue failure, headache), equipment malfunction (cable snapping, resistance bands breaking), or from overuse (tendonitis). The mechanism of injury was considered accidental if it resulted from dropped weights, improper use of equipment, or tripping over equipment⁵.

Maintaining an appropriate level of health related physical fitness allows a person to reduce the risk of disease and injury, work efficiently, participate and enjoy physical activities. Fitness facilities provide an avenue to engage in physical activity, which is widely encouraged to improve health. However, there is risk of injury⁸. This study emphasizes on the assessment of fitness level in these individuals to prevent any future fitness related injuries.

Materials & Methodology

After the approval from ethical committee ,50 gymnasium going males with minimum 3 months of gymnasium training and age 18-24 years participated in present observational study. Those who reported any shoulder instability or recent history of fracture were excluded. Demographic data recording was followed by assessment of upper limb fitness using the following tests.

For evaluating the fitness for strength, subjects had performed the bench press test¹⁰. For endurance, push up test¹¹ and for flexibility range of motion of the shoulder joint¹².

Data Analysis And Interpretation



Figure 1: Bench press strength test among n=50 gymnasium participants

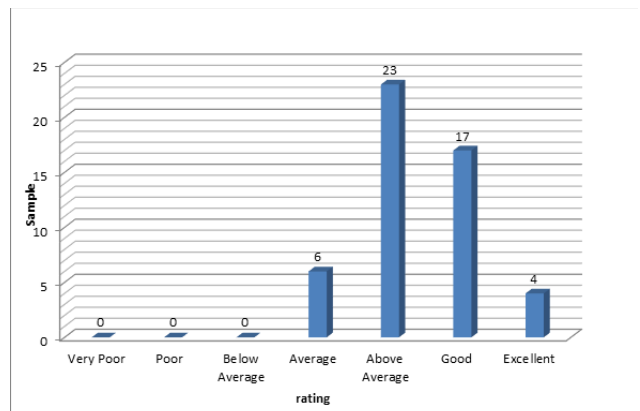


Figure 2: Pushups endurance test among n=50 gymnasium participants

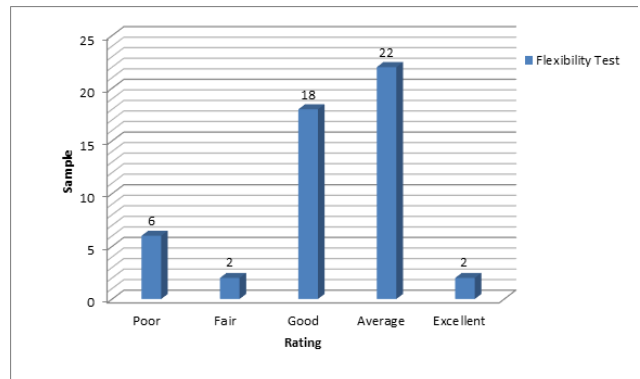


Figure 3: Shoulder wrist flexibility test among n=50 gymnasium participants

Result

For the figure 1, the participants were tested for muscular strength using the bench press test where 18% of the population was in the poor, 16% in the fair, 48% in the good, 14% in the excellent and 4% in the superior category.

For the figure 2, muscular endurance was tested using the pushup test. 12% were in the average, 46% in the above average, 34% in the good and 8% in the excellent category.

For figure 3, flexibility of the upper limb was tested by the shoulder wrist elevation test where 12 % fell in the poor, 4% in the fair, 36% in the good, 44% in the average and 4% in the excellent category.

Discussion

The primary objective of this research was to check the muscular strength, endurance and flexibility of the upper limb in gymnasium people. There is higher incidence of upper limb injuries being reported at fitness centers⁹. Findings from this study showed that all the

participants had good performance in upper limb strength test. If the participant is lacking in any aspect of fitness such as low muscle strength, tightness, early fatigue etc. it may cause injuries to that particular group¹³.

In fitness centers young age group people are involved with continuous workout. They tend to build up their muscles and maintain their body shape. Based on sports requirement, some even concentrate on strengthening specific group of muscles. This often leads to over use and in turn muscle fatigue¹⁴. This is also one of the causes for the rise in the injuries in the gymnasium facilities. A study in 2015 concluded that the injuries in the fitness facilities are due to overexertion⁹.

For resistance training exercises, the majority of the injuries are reported due to accidents, improper technique or lack of qualified supervision¹⁵. A study by Grey et al stated that 71.4% of the injuries can take place due to fall of weights, crush injuries or by neighboring fellow exercisers⁹. Idiopathic or acquired abnormal anatomy or biomechanics of the limbs also predispose to injuries. Also, it is not necessary that those with good fitness are not susceptible to injuries. Other factors like, improper use, unqualified trainers, overuse of the weights, unplanned protocols, psychological factors etc. even predispose to the injuries sustained at fitness centers¹³.

Pushups is an endurance activity involving pectoralis major, anterior deltoid, triceps along with external oblique muscles¹⁶. Most of gymnasium activities are involved with strength training. No studies have been found indicating training injuries due to lesser endurance.

The benefits of working out and fitness are widely known, but the risk of musculo-skeletal injury is an unfavorable consequence. Some modifiable risk factors reported for same are muscular strength and tightness¹³. In our study average flexibility of upper limb is reported. Such tightness issues¹³ can be a reason for higher incidence of injuries in fitness trainees.

If there are high number of gymnasium participants with a comparatively low trainers¹⁷, attention to every single one of them would be difficult. Second, the trainers should be qualified to know the exact positions for the particular exercise so that no excess strain or stress should be experienced. Large amount of injuries can be prevented if the trainers or coaches can correctly understand the principles and apply them¹⁸. Also the

trainees should workout under guided supervision of them.

Conclusion

From the data analysis, we have concluded that the general muscular fitness was in the average category.

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Conflict of Interest- None

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