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THE EFFECT OF STATIC AND BALLISTIC STRETCHING ON FLEXIBILITY OF HAMSTRING MUSCLE AMONG ASSISTANT JAILOR TRAINEES

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Abstract
The purpose of the study is to understand the effect of ballistic and static stretching on hamstring flexibility among jail warden trainees. Hamstring is a one of effective muscle for doing explosive activities like jumping, running and kicking. Proper stretching and strengthening's need for its maintenance. This study randomly selects forty male subjects aged between 24 -34 years. Further this forty divided into twenty (N=20) control group and twenty (N=20) experimental groups. The statistics used this study was independent't' test.

Keywords: Static and Ballistic Stretching, Flexibility.

Introduction

Flexibility of muscle is "the ability of a muscle to lengthen, allowing one joint (or more than one joint in a series) to move through a range of motion." Good muscle flexibility will allow muscle tissue to accommodate to imposed stress more easily and allow efficient and effective movement. More efficiency and effectiveness in movement as a result of enhanced muscle flexibility will assist in preventing or minimizing injuries and may enhance performance. More over educate and teach importance of stretching in physical training. Our selected subjects were under gone many physical training activities during their training period. In these situation chances of getting injury is high. Proper knowledge of stretching is very useful throughout life, it helps us to prevent injury and enhance performance.

Review of Literature

Shrier, Ian MD, PhD et al., (2004) the purpose of this article was to evaluate the clinical and basic science evidence surrounding the hypothesis that stretching improves performance. Data Sources and Selection: MEDLINE and Sport Discus were searched using MeSH and text words for English-language and French-language articles related to stretching and performance (or performance tests). Additional references were reviewed from the bibliographies and from citation searches on key articles. All articles related to stretching and performance was reviewed.

Main Results: Of the 23 articles examining the effects of an acute bout of stretching, 22 articles suggested that there was no benefit for the outcomes isometric force, iso kinetic torque, or jumping height. There was 1 article that suggested improved running economy. Of 4 articles examining running speed, 1 suggested that stretching was beneficial, 1 suggested that it was detrimental, and 2 had equivocal results. Of the 9 studies examining the effects of regular stretching, 7 suggested that it was beneficial, and the 2 showing no effect examined only the performance test of running economy. There were none that suggested that it was detrimental.

Conclusions: An acute bout of stretching does not improve force or jump height, and the results for running speed are contradictory. Regular stretching improves force, jump height, and speed, although there is no evidence that it improves running economy.

Fletcher, Iain M.; Jones, Bethan et al.,(2004) The purpose of this study was to determine the effect of different static and dynamic stretch protocols on 20-m sprint performance. The 97 male rugby union players were assigned randomly to 4 groups: passive static stretch (PSS; n = 28), active dynamic stretch (ADS; n = 22), active static stretch (ASST; n = 24), and static dynamic stretch (SDS; n = 23). All groups performed a standard 10-minute jog warm-up, followed by two 20-m sprints. The 20-m sprints were then repeated after subjects had performed different stretch protocols. The PSS and ASST groups had a significant increase in sprint time ($p <= 0.05$), while the ADS group had a significant decrease in sprint time ($p <= 0.05$). The decrease in sprint time, observed in the SDS group, was found to be non significant ($p >= 0.05$). The decrease in performance for the 2 static stretch groups was attributed to an increase in the muscular tendon's unit (MTU) compliance, leading to a decrease in the MTU ability to store elastic energy in its eccentric phase. The reason why the ADS group improved performance is less clear, but could be linked to the rehearsal of specific movement patterns, which may help increase coordination of subsequent movement. It was concluded that static stretching as part of a warm-up may decrease short sprint performance, whereas active dynamic stretching seems to increase 20-m sprint performance.

Fletcher, Iain M.; Anness, Ruth et al., (2007) the purpose of this study was to investigate the effect of manipulating the static and dynamic stretch components associated with a traditional track-and-field warm-up. Eighteen experienced sprinters were randomly assigned in repeated-measures, within-subject design study with 3 interventions: active dynamic stretch (ADS), static passive stretch combined with ADS (SADS), and static dynamic stretch combined with ADS (DADS). A standardized 800-m jogged warm-up was performed before each different stretch intervention, followed by two 50-m sprints. Results indicated that the SADS intervention yielded significantly ($p <= 0.05$) slower 50-m sprint times then either the ADS or DADS intervention. The decrease in sprint time observed after the ADS intervention compared to the DADS intervention was found to be non significant ($p > 0.05$). The decrease in performance post-SADS intervention was attributed to a decrease in the muscular tend nous unit (MTU) stiffness, possibly due to a reduction in muscle activation prior to ground contact, leading to a decrease in the MTU's ability to store and transfer elastic energy after the use of passive static stretch techniques. The improved 50-m sprint performance associated with the ADS and DADS interventions was linked to the rehearsal of specific movement patterns, helping proprioception and pre activation, allowing a more optimum switch from eccentric to concentric muscle contraction. It was concluded that passive static stretching in a warm-up decreases sprint performance, despite being combined with dynamic stretches, when compared to a solely dynamic stretch approach.

Objectives

- To educate need and importance of stretching in physical training
- Teach various types of stretching
- Introduce new stretching methods

Hypothesis

Based on research findings it was hypotheses that ballistic and static stretching will be a significant difference in hamstring flexibility on jail warden trainees.

Methodology

The present study confirmed to the trainees from Vellore central prison Tamilnadu the samples selected for this study is forty male trainees (twenty experimental group (N=20) and twenty control groups (N=20)

Training Method Used

The following training method were used for this study

1. 90/90 Hamstring
2. 2 front leg rises
3. Seated Floor Hamstring Stretch
4. Upper Back-Leg Grab
5. The Straddle
6. Single-Leg Balance

Administration of Exercise

The nature and importance of study was verbally explained for maximum participation. The experimental group was given six week training of static and ballistic stretching. The exercise given three days in a week Monday, Wednesday and Friday was given.

Collection of Data

The pretest data on hamstring flexibility were taken by using sit and reach box. After the pretest the subject were given six week training for hamstring flexibility. The post test was taken from both groups by using sit and reach box test after the six week training.

Statistical Technique

To find out whether there was any significant difference after the training period among control and experimental groups, the dependent “t” test was applied

Analysis of Data

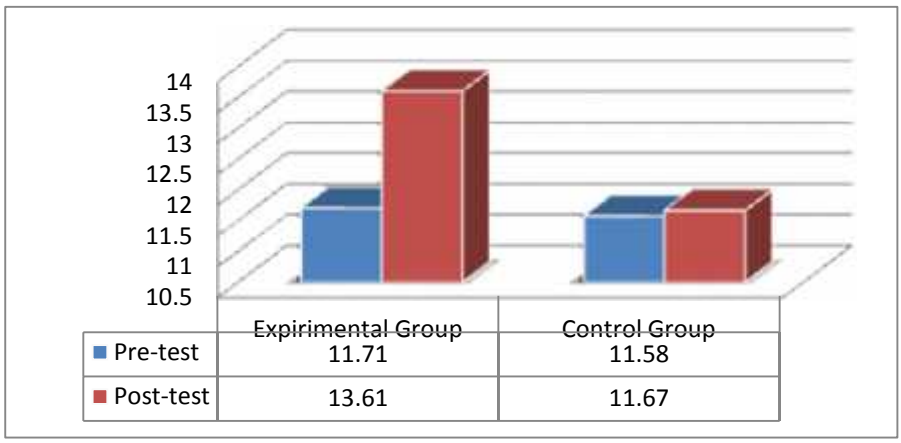
The purpose of this study was to find out the effect of six week static and ballistic exercise on flexibility of hamstring muscles among assistant jailor trainees Vellore central prison. The pre and post test data pertaining to respective physical variable were collected by employing standard test and instrument used on both the experimental and control group.

Table 1: Mean comparison of flexibility in the control and experimental group

Groups	N	Pre-test		Post-test		t-ratio
		Mean	SD	Mean	SD	
Experimental Group	20	11.71	2.56	13.61	2.54	5.902*
Control Group	20	11.58	2.59	11.67	2.58	1.88

*Significant level is 0.05 ='t' value = 2.045

The above table indicates there is no significance difference between pre and post test of hamstring flexibility in control group, since the calculated't' value of hamstring flexibility, 1.88 lesser than tabulated 't' value of 2.045 at 0.05 level of significance with 19 degrees of freedom. But in case of experimental group there is a significance difference between pre and post test of hamstring flexibility, since the calculated't' value of flexibility, 5.902 higher than tabulated 't' value of 2.045 at 0.05 level of significance with 19 degrees of freedom. The difference between pre and post test of flexibility of control and experimental group shown in figure 1.



Discussion on Finding

From the statistical analysis it is evident that in case of flexibility of Hamstring muscles in experimental group there is a marked difference between pre and post test. This graph shows there is no difference between flexibility of pre and post test among control group. So this result leads to the conclusion that proper will increase the flexibility of muscles

Conclusion

The result of the permit the following conclusion
Six week of ballistic and static stretching increase the hamstring flexibility
The control group had seemed no change in flexibility of hamstring muscles

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