



ORIGINAL RESEARCH PAPER

Physiotherapy

EFFICACY OF RESISTED QUADRICEPS EXERCISE ON AGING SKELETAL MUSCLES ON SARCOPENIA

KEY WORDS: quadriceps, resisted exercises, sarcopenia.

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ABSTRACT

BACKGROUND: Sarcopenia, or the decline of skeletal muscle tissue with age, is one of the most important causes of functional decline and loss of independence in older adults. The purpose of this article is to review the Efficacy Of Resisted Quadriceps Exercise on Aging Skeletal Muscles sarcopenia, its potential causes and clinical consequences, and the potential for intervention.

OBJECTIVE: To identify Efficacy Of Resisted Quadriceps Exercise on Aging Skeletal Muscles on aging skeletal muscles in sarcopenia

DESIGN: Randomized Control study.

SETTING: Healthcare physiotherapy. Kolathur

PARICIPANTS: Both men and women around age of 60-75.

INTERVENTIONS: Resisted Quadriceps strengthening exercises, aerobic exercises.

MAIN OUTCOME MEASURES: Pre and Post test values of 1 repetition maximum

RESULTS: Results shows that Resisted quadriceps exercises was effective in case of patients with sarcopenia.

CONCLUSION: The results of the study makes us to conclude that resistance exercises program was an effective tool to treat the patients with Sarcopenia. .

I. INTRODUCTION

Aging means the gradual structural changes that occur with the passage of time ,that are not due to disease or accident and that and that eventually leads to death.

Important changes in motor system accompanying aging , muscle become thinner , strength decreases and movements slower and less precise. Aging also alters the response of disease.

The internal environment of the body i.e., core temperature, acidity of the blood , electrolyte content, osmotic pressure is controlled by homeostatic process and varies from youth to old age.

As times goes on, altered immune responses and general degenerative changes weaken the defense mechanism and the ability if the aging body to cope with disease. Difficulty functions decline with age.

Recent studies have emphasized the importance of weight training to reverse muscle losses and improve functional abilities in the elderly and have provided evidence that power training would yield greater functional improvements than would muscular strength training alone [1,2,11,12]. At any age, muscular strength training may be performed with the correct combination of several variables, including the load, repetition number, set number, intensity, sequence, and intervals between sets and exercises. However, the benefits gained in elderly muscle strength are only noticeable after an average of 10 to 12 weeks of training [2,3]. Furthermore, there remains controversy in the literature regarding the best weight training work volume for the elderly, especially those with specific health conditions [13].

On the other hand, it has been established that aerobic exercises, muscle strengthening, flexibility, and balance [10,14,15] should be performed to prevent chronic degenerative diseases and minimize the alterations that occur with aging. Accordingly, there is an assumption that aerobic exercise training with a heart rate $\geq 60\%$ of the VO_{2max} and a frequency of 3 times per week can significantly increase the VO_{2max} in older adults [10,16]. However, the relationships and interactions between activities, such as the influence of aerobic training on muscular strength training, have not been established. Similarly, the order in which the combined training activities should be performed has not been established. Moreover, there is no consensus in the literature regarding which parameters of aerobic exercise and muscle strengthening are the most suitable for elderly populations with specific characteristics such as sarcopenia.

METHODOLOGY

THIS STUDY WAS CONDUCTED IN HEALTH CARE PHYSIOTHERAPY CENTER, KOLATHUR.

Inclusion criteria were: Age group 60-75 years, both men and women were included, osteoporotic patients with bone mass density less than zero

Exclusion criteria for subjects with age group below 60 and frail elderly of age above 75 years, osteoporotic patients with bone mass density less than zero, diabetic foot, subjects with cardiovascular and cardio respiratory diseases.

Total of 5 subjects with sarcopenia were taken by convenience sampling. All the subjects were explained about their condition & mode of assessment and written informed consent was obtained from them. Subjects were taken up for the study after they fulfilled the inclusion criteria. All subjects were evaluated prospectively in the Hospital.

Outcome measures were reassessed after 2 weeks of first assessment:Functional measures were assessed using

II. DATA ANALYSIS

The details collected and data was used for statistical analysis in the SPSS-20 software and the descriptive tabled were generated to demonstrate the findings. Paired T-test was used to compare the difference between the groups.

III. RESULTS

It is found that resisted quadriceps exercises was effective in treating patients with sarcopenia.

The results showed that there was significant difference in symptoms for the patients with sarcopenia on effect of resisted training.

I. DISCUSSIONS

Initially, it is important to note that the operational definition of the term sarcopenia remains difficult, although the term is widespread in the scientific community [21]. The latest definitions incorporate muscle strength, functional capacity, and muscle mass as diagnostic criteria [6,21]. In 2013, Cooper et al. reviewed the operational criteria for the definition of sarcopenia in addition to various aspects of physical function in elderly individuals evaluated in clinical trials [22]. The authors concluded that for the purposes of clinical trials, combinations of muscle mass and physical capacity measures should be used, although all currently used measures

present limitations. In this context, the present study used the criteria as determined by EWGSOP in addition to assessing the functional capacity as an outcome.

Recently, Liu et al. evaluated the impacts of 2 training programs in elderly individuals with and without sarcopenia. The authors compared participants in a physical activity program containing strengthening, aerobic training, balance, and flexibility exercises with those in an educational program on healthy aging composed of educational seminars and stretching exercises for the upper limbs at 6 and 12 months after intervention. Liu and colleagues observed no significant differences between the elderly individuals with and without sarcopenia during the first 6 months when assessed them using the Short Physical Performance Battery (SPPB). However, after 12 months, there was an improvement in the gait speed, with no significant difference between elderly individuals with or without sarcopenia who followed the physical activity program. The authors concluded that elderly individuals with sarcopenia could improve their physical capacities after the intervention [26]. Although these authors used different tests than those used in the present study, the results indicate an improved functional capacity in elderly individuals at risk of sarcopenia.

In contrast, in 2008 Lemos et al. reported impaired muscle strength gain after performing aerobic exercises at different intensities prior to muscle-strengthening exercises [28]. Although a direct measure of muscle strength was not used, the results presented herein challenge data presented earlier. One possible explanation lies in the greater recruitment of muscle fibers and consequent increased local metabolism and blood flow to the lower limbs provided by walking, which would allow better performance during strength training. Although this statement is controversial, the results indicate the possibility of a differential mechanism used by the elderly, who likely differ from younger individuals in relation to fatigue and oxidative metabolism [23-25]. Nevertheless, as this study did not aim to explain the contraction mechanism, this reasoning is speculative and should be verified in future studies with appropriate methodological designs

Conclusion

The results of the study makes us to conclude that resistance exercises program was an effective tool to treat the patients with Sarcopenia.

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