

Correlation between Forward Reaching Abilities and Early Activation Amplitude of Gastrocnemius in Healthy Individuals

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ABSTRACT

Background: Nearly one in three older people falls each year, findings also reveal fall incidence of 28-35% in older people over 64 years of age and approximately 32-42% in 70 years and older. There are many studies which say that there occurs activation of anterior and posterior leg muscles during forward reach but there is paucity of studies which establish any relation between their early activation and forward reaching ability.

Purpose: To find out that is there any correlation between forward reach and early activation amplitude of gastrocnemius existed.

Subjects: 60 healthy individuals in between the age group of 18-25 years studying in SBSPGI.

Method: Upon receiving consent, early activation amplitude for gastrocnemius was recorded using surface EMG and also the maximum forward reach was recording using functional reach test.

Result: Using the Pearson correlation coefficient, no relation was found between early activation of amplitude of gastrocnemius and forward reaching abilities.

Discussion: Whatever minimal activation that take place in gastrocnemius, it cannot be used in predicting any type of balance impairment.

Conclusion: The finding indicate that there is no relation between forward reaching abilities and early activation of gastrocnemius.

Keywords: *Functional Reach Test, EMG, Gastrocnemius Activation Amplitude*

INTRODUCTION

Postural control involves controlling body's position in space for dual purpose of stability and orientation. Postural orientation is defined as ability to maintain an appropriate relationship between body segments, and between the body and the environment for a task¹. Postural stability, referred to as balance is an ability to control the centre of mass in relation to base of support. The ability to control our body's position in space is fundamental to everything we do. All tasks require postural control that is every task has an orientation component and a stability component².

The calf muscle keeps the vertical column of the body erect and preventing its tendency to fall forward. Planter flexors are four times more powerful than the dorsiflexor of the ankle. Soleus as its name indicates has the form of the thick plate³. The medial part of the soleus has distinct functions: it is both strong mover of the foot on the leg and a stabilizer of the leg on the foot. The main dynamic and static flexor is the medial part of soleus which is mainly responsible for plantar flexion which is used to restrain forward momentum of the body. The lateral part is stabilizer, especially when the platform is unstable (Basmajian). During symmetrical standing soleus is continuously active