Gluteal muscle activity during wweight bearing and non-weight bearing exercise

Report on the gluteal muscle activity during weight bearing and non-weight bearing exercise

Background

Many of the studies suggest that decreased strength of the gluteus medius and gluteus maximus muscle contributes to various orthopaedic pathologies of the knee such as patellofemoral pain syndrome, knee arthritis, iliotibial band friction syndrome, anterior cruciate ligament sprains, and chronic ankle instability. Depends on age the gluteal muscles like gluteus minimus and gluteus medius can also susceptible to the atrophy.

Physical therapists have a wide range of exercises improving gluteal muscles strength with a different type of difficulty level. They have limited objective data regarding which exercises are most effective. Determining exercises that the most effectively recruit gluteal muscles will allow us to elicit the greatest benefits from rehabilitation and injury prevention programs.

1. 0Terms of Reference

Stephen Colbert (Business, Social Science and Sport) has requested Tomasz Czapski to write a report to examine the gluteal muscle activity during weight bearing and non-weight bearing exercises. It is requirement of Communication: Level 6 unit and is due to be submitted on 29/04/19.

2. 0Procedures

Research for this report was conducted primarily via the internet, by visiting reputable journals or websites.

3. 0Findings

3. 1. Decreased muscle strength

Decreased strength of the muscle occurs when the person cannot generate enough effort to produce normal muscle movement. It also may be called weak muscle or muscle fatigue.

A short-term weakness of the muscle can be caused by illness, lack of rest and can happen to everyone. Extremely exhausting difficult training along with improperly adjusted rest time may contribute to incorrect muscle work.

But if for reasons without normal explanation muscle fatigue will persist, it may be a sign of muscle health problems (myasthenia gravis). According to age or not enough physical activity, the muscle becomes weak. This can lead to chronic diseases that may require longer treatment. Voluntary muscle contractions are usually generated when the brain sends a signal through the spinal cord and nerves to a muscle. If the brain, nervous system, muscles, or the connections between them are injured or affected by the disease, muscles may not contract normally. This can produce muscle weakness.

The best way to improve muscle strength is to develop neural pathways. Performing specific exercise directed to the specific muscle or group of muscle can improve their strength and also body posture which may have a negative impact on the nervous system.

3. 2. Functional exercise

A large number of therapeutic exercises with different levels of difficulty is applied to prevention or treatment of injuries. Many rehabilitation programs show that effectively improve strengthening muscle. However, a lack of data showing which exercises most effectively activating gluteus medius and maximus muscles. For this purpose were conducted an investigation with normalized procedures using it electromyograph to measure muscle activity by recording electrical activity.

Twenty-one young and healthy females and males age between nineteen and twenty-five with no previous injury within the last two years and physically active took part in this study. Twelve therapeutic exercises were chosen consisting of three non-weightbearing and nine weight-bearing exercises suggested by clinicians that use them to strengthening gluteal muscles. No external load was applied in any of the exercises.

Result of this study shows that from twelve functional exercises that were performed side-lying leg raises most effectively activates gluteus medius muscle and at the same time suggested that it is the best exercise for people that may have a problem to execute the difficult exercises. Another two exercise one-leg squat and one-leg deadlift most effectively activates both the gluteus medius and gluteus maximus.

3. 3. Exercise with external load

Due to the insufficient number of proofs that functional exercise have a greater impact on the activation of muscle such as gluteus medius and gluteus maximus than exercises with the additional external load a comparison study was carried out. .

Group of thirty-four young females and males age between eighteen to twenty-five and with no previous injury in past six months of the lower part of the body took part in the investigation. Four exercises were used in this study. Two functional exercises such as forward step-up and side step-up that engage both muscles (gluteus maximus and gluteus medius) and two exercises with an additional load which were side-lying leg raise and glute kickback that most effectively isolating muscles. In these four exercises were used two devices such as Electromyograph to capture the electrical impulses during muscle contraction and hand dynamometer to make sure that the maximal effort was put in performed exercise.

As shown by the study with normalized procedures, one exercise with an extra load which is glute kickback is more effective in activates gluteal muscle (Gluteus Maximus) than the other two functional exercises. We should also know that another exercise with external load demonstrates much more activity on the gluteal muscle (Gluteus Medius) then two functional exercises.

4. 0Conclusion

Loss of strength in the muscle depends on physical activity and central nervous system. These two factors might be connected to each other. Lack of physical activity or any activity may have an impact on the nerve pathway that might fade away and muscle might lose their own memory.

Functional therapeutic exercises have a huge influence on muscle strengthening improving their activity. Adjusting the exercises accord to the patient becomes easier for physical therapists by scientific research, that

showed, that three exercises can replace others which less activates muscles.

Comparing functional exercises weight-bearing and non-weight-bearing with the external load we know that they have a significant impact on the gluteus activity. However, we still do not know anything regarding weight-bearing exercise with external load and their affects muscle activity.

5. 0Recommendations

The population should be more active and also avoid unnecessary stress. Long walks, use of the gym (strength training) and group physical activities such as Active Age are a great solution. The government should put in more effort to promote a healthy, active lifestyle investing more money in advertising in various media such as radio, television or the Internet. Promoting not only council gyms but also private gyms and their services.

Scientists should conduct additional research on the impact of external load on functional weight-bearing exercises.

6. 0Bibliography

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