

**A critical appraisal of “The Effects of Early Aggressive
Rehabilitation on Outcomes After Anterior Cruciate Ligament
Reconstruction Using Autologous Hamstring Tendon: A
Randomized Clinical Trial”**

By

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Abstract

Researchers conducted a study on whether non-aggressive or aggressive rehabilitation was more beneficial post-operation of an Anterior Cruciate Ligament repair. The validity of the study was examined and it was found that the study was reliable. The introduction provided ample background that lead to a sound hypothesis for the study. The methods of the study were written in a way that is repeatable and had very little researcher bias because it was a randomized clinical trial. The results provided all the data that was introduced in the hypothesis and presented them in that same order. The discussion was concise and the authors provided information about the flaws in the research. It was found that there was no statistical difference between the aggressive and non-aggressive rehabilitation groups.

Key words

Anterior Cruciate Ligament, aggressive rehabilitation, post-operation

Introduction

Anterior Cruciate Ligament repair is a fairly common operation, but there have been discrepancies on how to treat post-operation. Some physicians recommend non-weight bearing immediately after surgery while others recommend weight through the affected limb right after surgery. There is controversy about which method provides a quicker and better recovery for the patient following an ACL repair. During the critical analysis of this study, the question that was focused on was: whether or not aggressive or non-aggressive treatment in physical therapy is key for recovery post-op ACL repair?

Methods

The database that was used to find this article was the U.S. National Library of Medicine: PubMed. The keywords used in the search included “ACL” and “weight bearing”. In order to narrow the search, I changed the year range to be from 1990 to 2020 and to only articles that were written in English. This was done so that I could find some of the newer, more recent research. The language restriction of the search was placed because I am only able to read English. I excluded articles that included patients with Fibular Collateral tears so that I was able to find those only related to the Anterior Cruciate Ligament. Before I began to review articles, there were about 1000 search results.

The article was published in the Journal of Sport Rehabilitation in 2013. The authors of the article are Jesse C. Christensen, Laura R. Goldfine, and Hugh S. West. The study in the article was done in Utah. I chose this article for critical appraisal because it was a randomized clinical trial and therefore eliminated some of the potential for bias. I also chose it because it was

conducted by a physical therapist, a physical therapy assistant, and an orthopedic surgeon. The study being conducted by professionals in the field provided first-hand knowledge of ACL reconstructions.

Results

Summary of the study

This study included thirty-six participants that were all patients who had an anterior cruciate ligament reconstruction. The participants were between the ages of 18 to 55 years of age and had either a grade II or III ACL tear. As this study was a randomized clinical trial, the participants were split into two different groups, one where they underwent nonaggressive treatment and aggressive treatment in the other. In the aggressive treatment group, patients were not required to wear a knee brace right after surgery. They also began exercises to restore their full passive motion without any restrictions on hyperextension. The nonaggressive group wore a brace locked out at 20° of extension for the first week, and then unlocked 10° to 120° for the following 3 weeks. Their exercise regimen included passive, active-assist, and active ROM exercises. This study found that there is no benefit to aggressive methods after an ACL reconstruction.

Appraisal of the study introduction

The introduction provided clear background information that addressed the history of ACL reconstruction in the United States. It also discussed the controversial side about post-operative healing. The introduction was written in a clear and orderly manner. There is sound

rationale behind the study that could help support the study's suggestion that aggressive rehabilitation is more beneficial.

Overall, the introduction included mostly all of the relevant information, but could have included information about different types of grafts that are used. Most of the sources are current and within the 2000's, however there are a few from 1997 and 1998. One of the weak literatures was actually very outdated and from 1961 and discussed the etiology of chondromalacia. A more recent article should have been included on the topic to strengthen the introduction. Most of the keywords were addressed enough in the introduction except for muscle strength which was not really discussed.

Appraisal of the study methods

This study was a randomized clinical trial so therefore it was an experimental design. Randomization of subjects is crucial for a study to be void of bias. The person enrolling the subjects did not know the group assignments. The physical therapists who were not involved with data collection but treated patients of both groups were also blinded to the group assignments. The participants were randomized into their groups using a computer generated software. The subjects were not masked to their group assignments, but there was no way to blind the participants because there was no placebo to be given. The experiment could be replicated because the methods section is clear and written in an orderly fashion. Overall, the experimental design was conducted well with few errors.

In research, it is difficult to perform studies completely removing human error. There were 50 subjects originally screened and 36 subjects met the criteria. 3 subjects were lost due to attrition and menisci problems. Attrition could have possibly impacted the results because the statistical data could

have been changed due to a smaller sample size. The study is a single blinded study where one of the research assistants were not blinded to the group placements. The study would have been strengthened using a double blinded method where neither group was aware of the group placements. The participants in both groups had similar backgrounds and were all moderately active. This did not allow for diversity or the inclusion of groups who were less active prior to ACL reconstruction.

Appraisal of the study results

The results section was written in an orderly fashion that was clear and easy to follow. It includes information about the subject attrition and included a flowchart to show the amount of participants still in the study at each step. The results address the research question by presenting the different knee measurements used and places them into their own section. The authors reported all of the outcome measures including all of the data from each of the tests. This included the results from the questionnaire and all of the measurements from both the aggressive and non-aggressive group. Each part of the hypothesis was addressed in this section.

The authors did not mention the minimal clinically important difference. There was also no mention of the number needed to treat in this article. In the results section, it discusses the data from the IKDC questionnaire (International Knee Documentation Committee Score) and states that there was no significant difference between the groups. It does not provide information about the results about within group findings. This is later mentioned in the discussion section and is not clear when referenced back to the results.

Appraisal of the study discussion

The authors indicated the meaning of the finding and discussed it in greater detail. It went into more detail than it did in the results and they explained in detail what each of the results meant. Findings from other studies were discussed in this section, providing extra insight to what the results of this study could imply. Other journals discussed are credible and from current, primary sources. The conclusions are reflective of the results and clearly discusses what happened in the experiment. The authors did not over-conclude but they did wrap up the findings of the results. The author did address clinical significance and said that because STG autografts are becoming more popular, there is limited research about this type of graft. This study can be used for patients with STG autografts and help in rehabilitation by helping people chose which method would be better. The study says that early aggressive and non-aggressive methods after surgery are equivalent.

One of the articles mentioned in the discussion was from 1992 which is not current. Most of the studies referred to in the discussion section are about using different kinds of grafts (BPTB autografts), which is not relevant to the type of graft used. The limitations mentioned in this study are that outcome measures were not gathered beyond the 24 week period. It also says that they were unable to determine the actual clinical relevance. There was also no independent blinded data collector which could've led to potential bias. They also had a small sample of people and therefore were not able to find people of varying activity level.

Discussion

This study is clinically significant to current physical therapy practice because it shows that there is no real benefit to aggressive methods after ACL reconstruction. This can help

patients who are post-operative not have to undergo aggressive rehabilitation techniques but rather a more conservative method. This study was relevant to the clinical question because it compared non-aggressive and aggressive rehabilitation techniques.

More research on the topic needs to be done to investigate the intervention. Once more research is conducted and a significant difference is found in using a more aggressive treatment for post-operation ACL repairs, then it could be considered for clinical use. The potential benefit of using this intervention would be that certain patients would recover faster than those who are using the non-aggressive method. There is also a potential risk that when using the intervention, it may actually cause more harm and pain to the patient. The intervention's benefits do not outweigh the potential risks. More research needs to be conducted with a larger sample size to find that the benefits will outweigh the risk using this technique.

The research has validity, however, the findings of the research show that there was not a significant difference in the aggressive method. Therefore, until further research has been conducted and a more significant difference has been found, the more non-aggressive technique will be used. It is important to find reliable methods when using interventions on patients. In the future, I will use the intervention in a clinical setting only if more research is done on the subject. As of now, more conservative techniques will be used in order to prevent strain on patients.

The study was conducted in a way that is replicable and can be performed again using a larger sample size. The study found no significant difference in the use of aggressive or non-aggressive techniques in rehabilitation. However, if the study is repeated with a larger sample size, it may produce different results with different findings. There is a clinical significance in the study in that it found that conservative methods can be just as beneficial and may be easier for patients.