



# Return to Play after Anterior Cruciate Ligament Reconstruction among Amateur Soccer Players

## *Volver a jugar después del ligamento cruzado anterior reconstrucción entre futbolistas aficionados*

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### Abstract

**Objective** The aim of the present study is to assess the return to play among amateur soccer league players after anterior cruciate ligament (ACL) reconstruction.

**Materials and Method** The surgical protocols of ACL reconstruction surgeries performed in a sports medicine clinic from July 1<sup>st</sup>, 2013, to June 30<sup>th</sup>, 2014, were included in the study. Only the charts of amateur soccer league players who played once or twice a week were selected. The follow-up time was calculated as the number of months between surgery and the telephone survey. At the follow-up, the current status of the soccer playing was recorded. Those patients who were no longer playing in a team were asked what kind of sport they were currently practicing, as well as the main reason for not returning to team playing.

**Results** A total of 61 (25.6%) patients met the inclusion criteria. The mean follow-up time was of  $22.4 \pm 3.4$  months. At the follow-up, 30 (49.1%) patients were playing in amateur soccer teams. Among the patients who were no longer playing in a team, 19 (61.2%) were playing soccer occasionally, 11 (35.4%) were practicing other sports, and 1 developed a sedentary life style. The reasons for not returning to team playing were: fear of reinjury in 26%; knee symptoms in 26%; lack of confidence in the knee in 23%, family or job commitments in 23%; and not being eligible to participate in competitive sports in 2%.

**Conclusion** After an average of two years of ACL reconstruction, only half of the amateur soccer league players return to play.

### Keywords

- ▶ anterior ligament cruciate reconstruction
- ▶ return to sports
- ▶ return to play
- ▶ soccer

### Introduction

Soccer is the most popular sport worldwide, with an estimated 270 million active players.<sup>1</sup> Anterior cruciate ligament (ACL) tears are one of the most common knee ligament injuries in athletes, especially in contact sports.<sup>2</sup> Studies on the non-surgical treatment of ACL injuries have described acceptable functional results, but withdrawal from contact

sports like soccer is usually required.<sup>3,4</sup> The desire of the athletes to return to sports is cited as a major indication for ACL reconstruction surgery.<sup>5</sup> The surgery is performed with the aim of maximizing the stability and functional capacity of the ACL-deficient knee, thereby facilitating the return to sports.<sup>6,7</sup>

A systematic review and meta-analysis regarding return to sports following ACL reconstruction with more than 7,000

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patients demonstrated that 81% of them resumed playing some form of sport after surgery, 65% resumed their previous level of sports activities, and 55% returned to competitive sports.<sup>8</sup>

Given the variability in what is demanded of the knee in the different sports, the outcomes after ACL reconstruction may vary. Patients appear to be more likely to return to activities such as bicycling and jogging after ACL reconstruction than to sports that are bruising and require pivoting, such as soccer and football.<sup>9</sup>

Despite ACL tear being a common and potentially serious soccer injury, there are relatively few studies on the outcomes, especially regarding the return to the same level of performance after ACL reconstruction in these athletes.<sup>10-14</sup> Data on this would give orthopedic surgeons the ability to inform patients about what they should expect after surgery in terms of performance level, considering the return to the preinjury levels as the main indicator of success in ACL reconstruction.

The aim of the study is to evaluate the return to play in amateur soccer league players after ACL reconstruction, and to analyze the reasons why some of them have not returned.

## Methods

The present study is a case series in which the surgical protocols of patients with ACL reconstruction surgeries performed in a sports medicine clinic between July 1<sup>st</sup>, 2013, to June 30<sup>th</sup>, 2014, were included. Only the charts of amateur soccer league players who played once or twice a week (Tegner 9)<sup>15</sup> were selected. The exclusion criteria were: patients younger than 18 and older than 40 years of age; patients of the female gender; those who underwent revision ACL surgery or multiligament surgery; those who were professional (Tegner 10) or occasional (Tegner 7) soccer players; patients who mainly played a sport other than soccer; and those not possible to follow up.

The follow-up time was calculated as the number of months between surgery and the telephone survey.

For each surgical protocol, age, surgical technique, additional meniscal and/or chondral surgery, and type of graft were recorded.

The telephone survey was conducted by the main author. The current status of return to team playing (yes/no) was recorded. Those who did not return to play were asked what kind of sport they were currently playing (occasional soccer, another sport, or if they now led a sedentary lifestyle), and the main reason for not returning to play (fear of reinjury, knee symptoms, lack of confidence in their knee, family or job commitments, not being eligible to participate in competitive sports).

The Fisher exact test and the Mann-Whitney U test were used to calculate the differences between the group who returned to team playing and the one who did not.

## Results

Over a 1-year period, a total of 238 patients underwent ACL reconstruction. From this group, 61 (25.6%) met the inclusion

**Table 1**

Excluded	177 (74.3%)
Age < 18 and > 40 years	25
Female gender	10
Revision anterior cruciate ligament surgery	23
Multiligament surgery	10
Professional soccer players	6
Occasional soccer players	23
Main practice of another sport	57
Not possible to follow up	23

criteria, and 177 (74,3%) did not, and they were excluded (►Table 1). The mean follow-up time was of  $22.4 \pm 3.4$  months. The mean age at the time of the surgery was of 29.7 years (standard deviation [SD]: 5.5 years; range: 20–40 years).

All of the patients had an arthroscopically-assisted reconstruction of the ACL. In 85% cases, the surgical technique performed was transtibial, and in 15% it was medial portal. A total of 44 (72.1%) patients were submitted to a concomitant surgery (►Table 2). Double semitendinosus-gracilis autografts were used in 50 surgeries, and bone-patellar-bone autografts were used in 11 of them.

At the final follow-up, 30 (49.1%) patients were playing in an amateur soccer team. Out of those who did not return to team playing, 19 (61.2%) were playing soccer occasionally, 11 (35.4%) were playing other sports, and 1 (3.2%) developed a sedentary lifestyle.

The main reason for not returning to play were: fear of reinjury in 26%; knee symptoms in 26%; lack of confidence in the knee in 23%; family or job commitments in 23%; and not being eligible to participate in competitive sports in 2%.

There were only significant differences regarding age between the group who returned to team playing and the one who did not (►Table 3).

## Discussion

Our study is the first to exclusively describe the return to play in amateur soccer league players after ACL reconstruction. It

**Table 2**

Additional surgery	44	72.1%
Medial meniscectomy	7	11.4%
Lateral meniscectomy	34	55.7%
Medial meniscal repair	9	14.7%
Lateral meniscal repair	0	0%
Microfracture of the trochlea/patella	1	1.6%
Microfracture of the medial femoral condyle	0	0%
Microfracture of the lateral femoral condyle	1	1.6%

**Table 3**

	Return to amateur soccer league		p-value
	(+)	(-)	
Age (years)	28.1 (20–39)	31.1 (23–40)	0.04
Time from surgery (months)	22.5 (17–28)	22.3 (18–28)	0.91
Surgical technique (n)			
Transtibial/Medial portal	25/5	27/4	0.73
Type of autograft (n)			
Hamstrings/Bone-patellar-bone	24/6	26/5	0.74
Additional meniscal and/or chondral surgery (n)			
Yes/No	22/8	22/9	1

has shown that only half of the amateur soccer league players return to play after an average of two years after surgery.

Our results are similar to those of a large cohort study<sup>16</sup> with diverse competitive athletes that showed that 2 years after ACL reconstruction surgery only 60% of the participants had returned to their preinjury level of performance.

In another study with athletes who practice physically demanding sports, after an average time of 43 months from surgery to follow-up, only 42% of them resumed their previous performance levels or reached higher levels.<sup>17</sup>

Brophy et al<sup>10</sup> analyzed the factors influencing return-to-play in soccer players with different levels of performance, and they reported that out of all patients who underwent ACL reconstruction, only 35% were still playing the sport at the 7-year follow-up. Of those still playing, only 46% were still playing at the same or at a higher level than before the injury. They concluded that younger and male soccer athletes are more likely to return to play after ACL reconstruction.

Our results in percentage of return to team playing were higher than those reported in these previous studies, probably due to the shorter follow-up time, and because our series consisted exclusively of physically demanding soccer players (Tegner 9), who are highly motivated to return to competition.

It is relevant to distinguish the performance level when analyzing the return-to-sport, because most professional and elite players are able to return to play at the same level as before the injury. This is probably because this group of patients presents major differences in caretaking compared with amateur players, considering diagnostic evaluation, time to surgery, and postoperative rehabilitation, as well as high financial incentives.<sup>18</sup>

One study<sup>14</sup> presented the outcomes of a homogenous group of male professional soccer players who underwent ACL reconstruction; the authors reported that 95% and 62% of them returned to professional levels of performance at 1 year and 4 years respectively.

Another study<sup>13</sup> with professional soccer players after ACL reconstruction, revealed that only 2/3 of the players were still playing at the highest level 3 years later.

Some reports on ACL reconstruction in soccer players include patients with different sports performance levels. One study<sup>10</sup> reported that after an average of 4 years after ACL surgery, 68% of the patients were still active soccer players. Analyzing this group by sport performance level, ~37% played soccer at international or at the highest national level previous to injury.

The ability of the patients to return to sports after ACL reconstruction is influenced by various factors, which include postoperative knee function, social reasons and psychological state. One study prospectively<sup>19</sup> analyzed the effects of various subjective scoring systems on return-to-sports after ACL reconstruction, and found no significant differences between athletes who did and did not return to sports.

Multiple studies have reported that fear of reinjury, rather than clinical findings of instability or pain, is the single greatest reason for failure to return to sports.<sup>8,9,20</sup> When analyzing fear of reinjury as a reason not to return to the preinjury performance level, our results were similar to those reported in a previous study,<sup>21</sup> which describes that it is the main factor for not returning to play in 24% of the athletes who underwent ACL surgery.

The principal limitation of our study was the small sample size, which limited the scope of the data analysis. Another limitation was the lack of registration of the time period between ACL injury and surgery, and the volume and nature of rehabilitation pre- and postsurgery. Both factors could influence the return to sports to the same preinjury level.

One strength of our study was that it specifically evaluated, in amateur soccer players, the rate of return to the same level of performance as before the ACL injury. A return to the preinjury performance level was thought to represent the most robust assessment of a successful return-to-sports outcome. Previous studies did not specify whether the participants who returned to competitive sports returned to their preinjury level of performance or even to the same sport they used to play before the injury.<sup>14</sup> As a result, these studies possibly overestimated the return-to-sports rate.

## Conclusion

After an average of two years of ACL reconstruction, only half of the amateur soccer league players return to team playing.

### Conflicts of Interest

The authors have none to disclose.

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