

## Original article

doi: 10.35366/121076

# Partial meniscectomy recovery time for work return, not as fast as we believe

*Retorno al trabajo post-meniscectomía parcial. ¡No es tan rápido como creemos!*

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**ABSTRACT. Introduction:** the objective of our work is to assess the timeline of return to work (RTW) and sports, following arthroscopic partial meniscectomy. We hypothesized that patients in greater-intensity occupations would demonstrate greater duration of absence from work and sports, and also that most patients return to unrestricted activity within 7 weeks after knee arthroscopy. **Material and methods:** we obtained from 100 cases preop Tegner, Lysholm, VAS and type of work based on physical demand (REFA classification). We reevaluate all cases at three months and at two years postop. **Results:** all the patients returned to work, and 90% returned to sports. The median RTW time was 4.8 months. 79% RTW by six months. Of the 21 patients with no subjective improvement by six months, seven required revision knee arthroscopy, 14 had biomechanical examinations that showed submaximal effort and they returned to work. We evaluated type of meniscal tear, gender, age, Lysholm score, Tegner, VAS, satisfaction with knee results postop and rehabilitation sessions, and we did not find any statistically significant correlation with RTW time. **Conclusion:** we thought RTW after meniscal surgery strongly depends on the physical work strain, but we didn't find that in our study. So, we taught much

**RESUMEN. Introducción:** el objetivo de nuestro trabajo es evaluar el tiempo de recuperación para regresar al trabajo (RAT) y a la práctica deportiva tras una meniscectomía parcial artroscópica. Nuestra hipótesis era que los pacientes con ocupaciones de mayor intensidad tendrían una mayor duración de la baja laboral y deportiva, y que la mayoría de los pacientes volverían a realizar actividades sin restricciones en un plazo de 7 semanas tras la artroscopia de rodilla. **Material y métodos:** obtuvimos de 100 casos preoperatorios Tegner, Lysholm, EVA y tipo de trabajo basado en la exigencia física (clasificación REFA). Reevaluamos todos los casos a los tres meses y a los dos años de la operación. **Resultados:** todos los pacientes volvieron al trabajo y el 90% volvió a practicar deporte. La mediana del tiempo de vuelta al trabajo fue de 4.8 meses. El 79% volvió al trabajo en seis meses. De los 21 pacientes que no experimentaron una mejora subjetiva en seis meses, siete necesitaron una artroscopia de rodilla de revisión, 14 se sometieron a exámenes biomecánicos que mostraron un esfuerzo submáximo y volvieron al trabajo. Evaluamos el tipo de rotura meniscal, el sexo, la edad, la puntuación de Lysholm, Tegner, VAS, la satisfacción con los resultados de la rodilla después de la operación y las sesiones de rehabilitación, y no encontramos ninguna correlación estadísticamente significativa con el tiempo de vuelta al trabajo. **Conclusión:** pensábamos

## Level of scientific evidence: IV (case series)

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Received: 04-14-2024. Accepted: 06-13-2025.

**How to cite:** Rodríguez-Roiz JM, Montañana-Burillo J, Rodríguez-Verdugo F, Medrano-Nájera C, Sánchez-Díaz JS. Partial meniscectomy recovery time for work return, not as fast as we believe. Acta Ortop Mex. 2025; 39(5): 287-291. <https://dx.doi.org/10.35366/121076>



more variables influences on work return, and worker compensation has an important value.

**Keywords:** meniscectomy, arthroscopy, knee, return to work, evaluation.

que la reincorporación al trabajo tras una cirugía de menisco dependía en gran medida del esfuerzo físico que exigía el trabajo, pero no lo hemos comprobado en nuestro estudio. Por lo tanto, creemos que hay muchas más variables que influyen en la reincorporación al trabajo, y que la indemnización laboral tiene un valor importante.

**Palabras clave:** meniscectomía, artroscopia, rodilla, retorno al trabajo, evaluación.

#### Abbreviations:

PASS = patient-acceptable symptom state

RTW = return to work

VAS = visual analog scale

## Introduction

Return to work (RTW) is an important issue for patients and surgeons. Patients in laboral age, with a meniscal traumatic tear, usually asked the same question before surgery: «will I be able to come back soon to work?»

It is imperative that physicians appropriately explain to patients on when they can RTW after a knee arthroscopy, to manage expectations. RTW following elective surgeries is an important consideration to patients; however, clinical information about this is low, with just a few articles studying about this, the majority is about sports return, specially at professional level.<sup>1,2</sup>

Occupational injury and work-related disability is a significant public health problem, meniscal tears are one of the most common injuries with an incidence of 24 per 100,000 per year.<sup>3</sup> Patients with these injuries, are typically on laboral age and with high activity level, so this become a challenging injuries for the orthopaedic surgeon, whose goal is to provide pain-free return to work and preserve maximal meniscal integrity. Meniscal repair is the best option today for treating a meniscal tear, but is not always possible, and the decision to make a partial meniscectomy versus repair is multifactorial depending on tear characteristics, concomitant injury, patient characteristics, and goals.

The mean recovery time expected by orthopedic surgeons for a patient with an isolated meniscal tear than required an arthroscopic meniscectomy, have been reported to be five weeks or less.<sup>4,5,6</sup>

The purpose of this investigation is to assess the timeline of return to work and sports, following arthroscopic partial meniscectomy, for traumatic non-reparable meniscal tear. We hypothesized that patients in greater-intensity occupations would demonstrate a lower rate of return to their previous level of work intensity and a greater duration of absence from work and sports. We hypothesize, as we conclude by literature revision, that most patients return to unrestricted activity within seven weeks after knee arthroscopy.

## Material and methods

This study focused on a sample of injured workers with an accepted worker's compensation time-loss claim for a knee injury, and who underwent surgery for knee partial meniscectomy between January 2018 and January 2021, a total of 150 cases, by two surgeons from our team specialized in knee arthroscopy.

Inclusion criteria were just traumatic and non-reparable meniscal tears, on patients between 25-63 years old, and salaried patients.

Exclusion criteria were: degenerative meniscal tears, meniscal repair, follow up less than two years, patients having lateral retinacular release, ligament reconstruction, or cartilage restoration procedures; self-employed or tele-work patients, and patients unwilling to complete study, informed consent or follow-up.

All patients had 2-3 portal knee arthroscopy performed under spinal anesthesia in a hospital-based ambulatory surgery center. Finally, 100 patients were included.

This study was performed in line with the principles of the Declaration of Helsinki. Informed consent was obtained from all individual participants included.

Preoperative Lysholm, and Tegner scores were obtained. Also pain, measured with a visual analog scale (VAS), with a pain score ranging from 0 to 10. Lysholm and VAS were measured at first month postop, and the same two tests adding Tegner score at third month and again at two years postop. Patients with a functional telephone number or e-mail address were contacted to complete a detailed questionnaire regarding their work and sport status, and satisfaction.

Patients were also asked if they return to the same work and same load of work, reasons for not returning to work were obtained. Work-intensity status or workload of every patient was stratified based on the German classification system «REFA classification» from occupational and social medicine.<sup>7,8,9,10</sup> The REFA-classification is already used in knee surgery to describe changes in the workplace after operative intervention.<sup>8</sup> Is a quantitative scale, It comes from zero, or a work without physical strain (desk work) until four, work with most heavy physical strain (construction workers).

Patients were also classified between earlier RTW (less than four months postop), or late RTW (more than four

months postop). The expected recovery time after this surgery is highly variable in literature, between 1-4 months, that's the reason we choose four months as the point for determining late RTW.

Satisfaction with current knee function was assessed postoperatively (at third month and two years postop) with the question: «About your knee function, would you consider that your current condition is satisfactory? For knee function, you should take into account your activities of daily living, sport and recreational activities, your pain and other symptoms, and your quality of life». This had the response options: yes/no. This question is commonly used to assess patient-acceptable symptom state (PASS).<sup>11,12</sup>

SPSS (Version 22, IBM Corp for Windows) was used for statistical analysis of the data. Correlation tests were performed using the Pearson and Spearman correlation coefficient, and normally distributed results were compared using the Student's t test. The level of significance was presumed at  $p < 0.5$ .

## Results

This study included 100 consecutive patients (86 male and 14 female), mean age 45 years (26-61 years). No patients had infection, deep venous thrombosis, or other notable postoperative complications. All patients had a minimum of two years follow up.

All the patients returned to work at their original jobs, and 90% returned to sports. The median time to return to work following surgery was 143 days (4.8 months). 79% returned to work within six months. Of the 21 patients (21%) with no subjective improvement by six months, seven required another knee arthroscopy for additional partial meniscectomy, 14 had functional capacity examinations that showed significant submaximal effort and they returned to work, five at full duty, nine at modified duty.

55 patients were classified as short RTW (less than four months), and 45 patients as late RTW (more than four months) (Table 1).

According to the REFA classification (Table 1), five patients were involved in work without special physical strain or REFA 0 (28.2%), 29 patients were involved in work with small physical strain or REFA 1 (23.1%), 22 patients in work with moderate physical strain or REFA 2 (12.8%), 33 patients in work with hard physical strain or REFA 3 (35.8%) and finally 11 with most heavily physical strain or REFA 4 (Table 1).

Sports level was quantified using Tegner score. Less than the middle of the patients, 43 cases, played sports in a regular way (Tegner 4-7), all the cases at amateur level. The others are mostly sedentary (Tegner equal or minor to 3).

All patients were able to return to their jobs, whereas the duration of RTW was 126.4 days (REFA 0), 133.06 days (REFA 1), 143.77 days (REFA 2), 134.57 days (REFA 3), and 199.63 days for REFA four patients (Figure 1).

Contrary to our initial hypothesis, we cannot find statistical difference ( $p = 0.1138$ ) between higher level of occupational intensity (based on REFA scale) and longer duration of RTW (Figure 1).

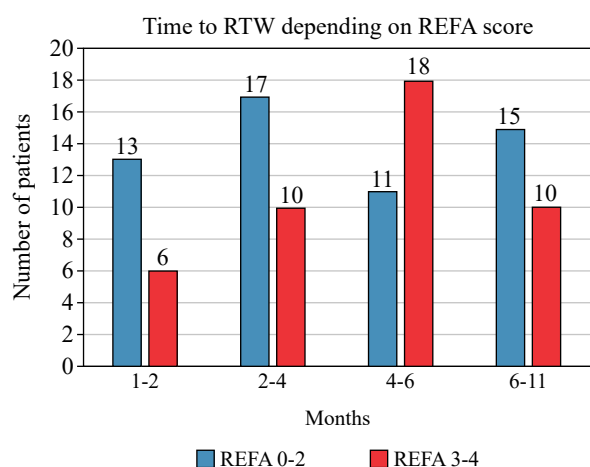
Every patient needs on average 53 rehabilitation sessions (24-173 sessions). Statistical correlation was found between longer days to RTW and more rehabilitation sessions ( $p = 0.00432$ ). We did not find statistical relationship between REFA score and number of rehabilitation sessions needed ( $p = 0.212$ ).

Pain and Lysholm scores at three-month follow-up were globally significantly better. VAS for pain significantly

Table 1: Univariate analysis of factors associated with time to return to work.

| Variable                              | Return to work                 |                             | Statistical correlationship p |
|---------------------------------------|--------------------------------|-----------------------------|-------------------------------|
|                                       | Earlier (< 4 months)<br>N = 55 | Long (> 4 months)<br>N = 45 |                               |
| Age at surgery (years)                | 45                             | 44                          | No<br>0.1093                  |
| Gender                                |                                |                             |                               |
| Male                                  | 40                             | 35                          |                               |
| Female                                | 5                              | 9                           |                               |
| Knee side                             |                                |                             |                               |
| Right                                 | 25                             | 24                          |                               |
| Left                                  | 30                             | 21                          |                               |
| Type of partial meniscectomy          |                                |                             |                               |
| Posterior horn/body internal meniscus | 44                             | 36                          |                               |
| Posterior horn/body lateral meniscus  | 8                              | 5                           |                               |
| Anterior horn lateral meniscus        | 3                              | 0                           |                               |
| Both meniscus                         | 0                              | 4                           |                               |
| Work load (REFA) (cases)              |                                |                             |                               |
| 0                                     | 5                              | 3                           |                               |
| 1                                     | 29                             | 13                          |                               |
| 2                                     | 22                             | 10                          |                               |
| 3                                     | 33                             | 13                          |                               |
| 4                                     | 11                             | 6                           | No<br>0.1138                  |
| Lysholm                               |                                |                             | No<br>0.30                    |
| Preoperative                          | 52.22                          | 53.35                       |                               |
| Postoperative*                        | 97.5                           | 81.64                       |                               |
| VAS                                   |                                |                             |                               |
| Preoperative                          | 6.27                           | 6.06                        |                               |
| Postoperative*                        | 2.96                           | 3.23                        |                               |
| Tegner                                |                                |                             |                               |
| Preoperative                          | 3.44                           | 3.22                        |                               |
| Postoperative*                        | 3.12                           | 2.22                        |                               |
| Rehabilitation sessions               | 35                             | 77                          | Yes<br>0.00432                |
| Satisfaction with knee function*      |                                |                             |                               |
| Yes                                   | 50                             | 4                           |                               |
| No                                    | 5                              | 41                          |                               |

\* Variables postop on this table are measured at third month post-surgery.



**Figure 1:** Time to return to work. Number of cases returning to work, sub-classified on REFA score. RTW = return to work.

improved from  $6.7 \pm 1.9$  preoperatively to  $2.2 \pm 1.4$  points postoperatively. The Lysholm score showed a mean increase of 22 points from pre-operatively  $54.4 \pm 18.9$  to  $76.2 \pm 19.8$  points postoperatively. We did not find statistical correlation between REFA score and Lysholm score at three months ( $p = 0.456$ ) and at two years postop ( $p = 0.567$ ).

We did not find statistical correlation between age and time to RTW ( $p = 0.1093$ ), neither with Lysholm postop and time to RTW ( $p = 0.30$ ).

At two years follow-up all the patients are actively working, without any issues reported.

## Discussion

Data describing return to work after meniscal repair/partial meniscectomy are not studied as much as sports return. Nonetheless absence from work we taught strongly depends on the physical work strain, but we didn't find that in our study. In our institution patients performing work with heavy work strain are informed about probable longer periods off work, compared to desk workers. While, as explained before, our results don't support that idea.

Stetson and Templin<sup>13</sup> found return to work and normal activities, on athletes, at 19 days post arthroscopic meniscectomy. Lysholm and Gilquist<sup>14</sup> did report that 68% of athletes resumed full athletic training within two weeks of arthroscopic meniscectomy. All this is a faster return to activity than in our investigation and may suggest that athletes recover more quickly than a diverse population of athletes and non-athletes.<sup>15,16</sup>

We found that most of the patients use a car to get to work, and patients found it obviously important to know when they can drive, as a variable to get back to their previous work. Hau et al<sup>17</sup> evaluated driving reaction time after right knee arthroscopy. Most patients had significant improvement in reaction time from preoperatively to 4 weeks postoperatively.

With regard to the functional outcome, we found that patients experienced a significant pain relief as measured with the VAS and a significant increase of knee function as measured with the Lysholm score, at three months postop and that get also better at two years postop, but we did not find a statistical correlation between RTW and lysholm or VAS.

About sports return, in general, patients expected fast recovery and a high level of participation in leisure activities after meniscal surgery. Furthermore, less than 50% were satisfied with their current knee function 3 months after surgery. We thought patients are over-optimistic about partial meniscectomy «fast» results, and with this data and more published, we could say for amateur sports players and workers, it takes more time, as we explained before, than professional athletes.

Another factor that may contribute to overly optimistic expectations is stories about quick recovery in professional athletes, as pointed out by Zarins et al.<sup>18</sup> Indeed, this is a small, although highly visible group of patients who have access to healthcare resources (including rehabilitation) that are not available to most other patients, and they are likely to have a much higher possibility of quick recovery due to a higher level of preoperative functioning.

We assume our patients are mostly sedentary (less than the middle of the patients, 43 cases, made sports on a regular way), so our hypothesis is that maybe this patients are not really prepared for a «physical» training, and could be one explanation for longer times for RTW compared to general population (in another publications), also assuming the worker's compensation factor, that could be of high relevance, specially if we found that of the 21 patients with no subjective improvement by six months, 14 had functional capacity examinations that showed significant submaximal effort (measured by biomechanics labs) and they returned to work, five at full duty, nine at modified duty.

Partial meniscectomy is considered a «fast» and «easy» surgery and recovery, maybe that is right, but must be done in the right way. Of the 21 patients with no subjective improvement by six months, seven required another knee arthroscopy for additional partial meniscectomy. We must try to preserve the meniscus as much as possible, but if we leave some injured meniscal tissue, the patient could need a new surgery.

Our study has limitations, the choice of surgical procedure was not randomized but instead based on the type of tear and surgeon experience. The isolated influence of the meniscal rupture type was not evaluated in the present study. A randomized study design evaluating meniscal repair versus partial meniscectomy in principally repairable meniscal ruptures would enable the isolated comparison of both procedures but would not be ethically possible.

It is assumed that a partial meniscectomy in a «repairable» meniscal rupture would result in more osteoarthritic changes compared with the present partial meniscectomy group.<sup>19</sup> A recent meta-analysis illustrates the lack of level I evidence to guide the surgical management of

meniscal tears,<sup>20</sup> so in some cases surgeon subjective choice determines the treatment and this is a limitation in a few studies about this. In this study we assume the influence of workers compensation.

Our study also has strengths. Transfer bias was minimized: complete follow-up was obtained on all patients. Reporting bias was minimized: the described levels of activity and the terminology have been validated by Lysholm, REFA classification and Tegner score. The two surgeons are specially oriented in our institution to knee arthroscopy and have similar level of expertise and ability for meniscal surgery.

## Conclusions

We tough patients with greater physical intensity occupations may require longer RTW time, although we did not find statistical significant differences between RTW time and age, gender, injured meniscus, Tegner level and level of worker activity (REFA score). Many other variables influences RTW and sports return, worker compensation seems an important one, and could explain the longer and paradoxical RTW in some patients with low physical strain work.

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