

Clinical effects

Major Findings

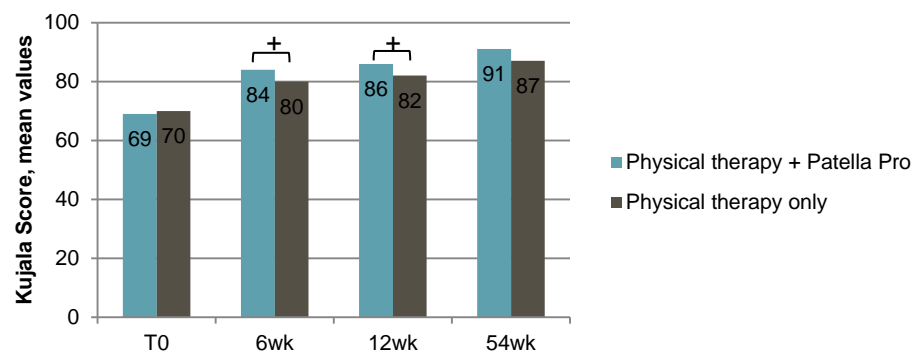
Patella Pro in combination with physical therapy (PT) compared to physical therapy only:

- Patients with PT + Patella Pro had significantly higher KOOS subscale scores than patients with PT only (after 6 and 12 weeks)
 - 16% and 11% improvement in subscore "symptoms", respectively
 - 15% and 19% improvement in subscore "pain", respectively
 - 11% and 8% improvement in subscore "ADLs", respectively
 - 10% and 20% improvement in subscore "sports", respectively
 - 23% and 15% improvement in subscore "QoL", respectively

- Patients with PT + Patella Pro had significantly higher mean Kujala score than patients with PT only (after 6 and 12 weeks)
 - 5% improvement after 6 weeks
 - 5% improvement after 12 weeks

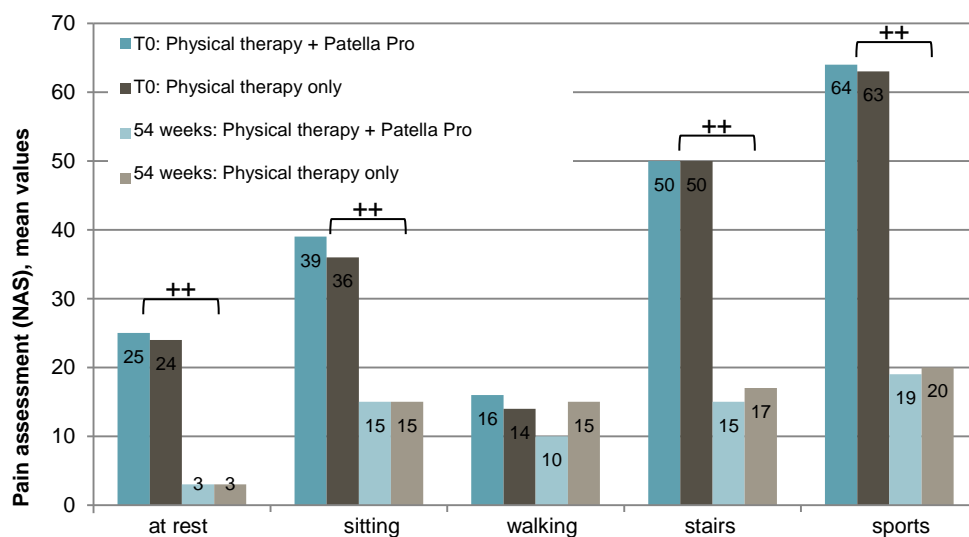
- Patients with PT + Patella Pro had significantly less pain than patients with PT only (after 6 and 12 weeks)
 - 38% reduction while climbing stairs after 6 weeks
 - 39% reduction while climbing stairs after 12 weeks
 - 33% reduction while playing sports after 12 weeks

Significant improvement in mean Kujala score after 6 and 12 weeks with PT + Patella Pro compared to PT only (Petersen et al., 2016; Kujala score was adapted by eliminating "muscular atrophy" and "flexion parameters"; Asterisks indicate significant group differences with + = $p < 0.05$)



The results of both treatment groups showed significant improvements in all outcome measures over the study period of 54 weeks

Decreased pain after one year. Pain assessment on numerical analog scale (NAS: 0= no pain at all, ..., 100= extreme pain) for both treatment groups (Petersen et al., 2016; Askerisks indicate significant group differences with ++ = $p < 0.001$)



Clinical Relevance

Patellofemoral Pain Syndrome (PFPS) is a common cause for anterior knee pain. Its incidence of 22in1,000 persons per year is quite high, and women are affected twice often as men. The causes are multifactorial. (Petersen et al. 2014).

Patients suffer from retro- and/or peripatellar pain, which worsens during activities involving heavy use of the patellofemoral joint – such as walking, running, climbing stairs, squatting and prolonged sitting. (Rembitzki et al., 2013) Furthermore the symptoms cause many athletes to limit their sport activities (Blond & Hansen 1998).

Surveys like the KOOS or Kujala score are instruments to assess the patient's opinion about their knee and associated problems. Among others, activity and mobility are assessed to gain insights into the level of independence of the patient. An increased grade of mobility is crucial to reach a satisfying quality of life. Activities of daily living (ADLs) include self-care activities as functional mobility, dressing, eating and personal hygiene as well as activities to live independently in a community.

Summary

In patients with PFPS, Petersen et al. (2016) compared clinical outcomes after treatment with the realignment brace Patella Pro in combination with supervised exercise with clinical outcomes after supervised exercise alone. Within the first six weeks after recruitment all patients entered a supervised exercise program consisting of education on PFPS, self-directed exercises and physiotherapy. One group was also fitted with Patella Pro and had to wear it for a minimum of six hours per day within those six weeks.

There were no group differences at recruitment, and both groups improved significantly in all measured outcomes after one year.

With PT + Patella Pro there were significant improvements at 6- and 12-week follow-up compared to PT only. Such improvements were found for all KOOS subscales, Kujala score and pain while stair climbing and sports.

There is a synergistic effect of physical therapy and Patella Pro, which is most important during the first three months. It seems that Patella Pro facilitates early rehabilitation.

References of summarized studies

Petersen, W., Ellermann, A., Rembitzki, I. V., Scheffler, S., Herbort, M., Brüggemann, G. P., ... & Liebau, C. (2016). Evaluating the potential synergistic benefit of a realignment brace on patients receiving exercise therapy for patellofemoral pain syndrome: a randomized clinical trial. *Archives of orthopaedic and trauma surgery*, 1-8. DOI 10.1007/s00402-016-2464-2

Other References

Blond, L., & Hansen, L. (1998). Patellofemoral pain syndrome in athletes: a 5.7-year retrospective follow-up study of 250 athletes. *Acta Orthop Belg*, 64(4), 393-400.

Rembitzki, I. V., Liebau, C., & Petersen, W. (2013). Patellofemoral Pain Syndrome: A multimodal therapeutic approach. *Medicalsportsnetwork*, 01.13.

Petersen, W., Ellermann, A., Gösele-Koppenburg, A., Best, R., Rembitzki, I. V., Brüggemann, G. P., & Liebau, C. (2014). Patellofemoral pain syndrome. *Knee Surgery, Sports Traumatology, Arthroscopy*, 22(10), 2264-2274. DOI 10.1007/s00167-013-2759-6

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