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Mechanical traction from different knee joint angles in patients with knee osteoarthritis A randomized controlled trial

Abstract

Objective

To compare the effect of mechanical traction from different knee angles on pain, physical function, and range of motion in patients with knee osteoarthritis.

Design

A single-blinded, randomized controlled trial.

Setting

Outpatient public and governmental Hospital clinics.

Participants

One hundred and twenty patients with knee osteoarthritis were randomly assigned into 4 equal groups with 30 patients in each group.

Interventions

Group (A) received conventional physiotherapy(CPT) treatment; group (B) received CPT with knee traction from full extension, group (C) received CPT with knee traction from 90° flexion, while group (D) received CPT with knee traction from 20° flexion. Interventions were applied 3 sessions a week for 4 weeks.

Outcome measurements

Visual analog scale (VAS), knee passive range of motion and the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) were measured at baseline, immediately after 4 weeks of intervention, and after 4 weeks of no intervention as a follow-up.

Results

After eight weeks, the mean (SD) for VAS scores were 30.97 ± 8.68, 24.0 ± 8.8, 15.43 ± 6.31, and 16.17 ± 6.11 mm; for total WOMAC scores were 26.77 ± 9.19, 20.3 ± 8.52, 13.27 ± 6.25, and 13.43 ± 7.14 for groups A, B, C and D, respectively. The three traction groups showed statistically significant changes in pain scores, physical function, and total WOMAC, but not for knee passive range of motion, in favor of traction groups C and D than the conventional group ($P < 0.05$).

Conclusions

Traction from 90°and 20° of knee flexion was found superior to full extension knee in improving pain and physical function, but not for knee passive range of motion, in patients with knee osteoarthritis.

References

1. Michael JW-P, Schlüter-Brust KU, Eysel P. The epidemiology, etiology, diagnosis, and treatment of osteoarthritis of the knee. *Dtsch Arztebl Int* 2010; 107: 152–162.

PubMed | Web of Science | Google Scholar

2. Primorac D, Molnar V, Rod E, et al. Knee osteoarthritis: a review of pathogenesis and state-of-the-art non-operative therapeutic considerations. *Genes (Basel)* 2020; 11: 54.

Crossref | PubMed | Google Scholar

3. Lespasio MJ, Piuzzi NS, Husni ME,. et al. Knee osteoarthritis: a primer. *Perm J* 2017; 21: 16–183.

Crossref | PubMed | Google Scholar

4. Ferreira AH, Godoy PBG, de Oliveira NRC, et al. Investigation of depression, anxiety and quality of life in patients with knee osteoarthritis: a comparative study. *Rev Bras Reumatol Engl Ed* 2015; 55: 434–438.

Crossref | Google Scholar

5. Chen Y, Sun Y, Pan X,. et al. Joint distraction attenuates osteoarthritis by reducing secondary inflammation, cartilage degeneration and subchondral bone aberrant change. *Osteoarthritis Cartilage* 2015; 23: 1728–1735.

Crossref | PubMed | Google Scholar

6. Intema F, Van Roermund PM, Marijnissen ACA, et al. Tissue structure modification in knee osteoarthritis by use of joint distraction: an open 1-year pilot study. *Ann Rheum Dis* 2011; 70: 1441–1446.

7. Woude J, Wiegant K, Heerwaarden RJ, et al. Knee joint distraction compared with high tibial osteotomy: a randomized controlled trial. *Knee Surg Sports Traumatol Arthrosc* 2017; 25: 876–886.

Crossref | PubMed | Google Scholar

8. Alpayci M, Ozkan Y, Yazmalar L,. et al. A randomized controlled trial on the efficacy of intermittent and continuous traction for patients with knee osteoarthritis. *Clin Rehabil* 2013; 27: 347–354.

Crossref | PubMed | Web of Science | Google Scholar

9. Pandya MR, Sheth MS. Effect of mechanical traction on pain and function in subjects with osteoarthritis knee. *Int J Physiother Res* 2017; 5: 2198–2202.

Crossref | Google Scholar

10. Jagtap V, Shanmugam S. Effect of mechanical traction in osteoarthritis knee. *Int J Sci Res* 2012; 3: 440–443.

Google Scholar

11. Choi MS, Lee DK. The effect of knee joint traction therapy on pain, physical function, and depression in patients with degenerative arthritis. *J Korean Phys Ther* 2019; 31: 317–321.

Crossref | Google Scholar

12. Vekariya JN, Karamta DL, Rathod SR. The effect of traction in knee osteoarthritis: an evidence based study. *J Emerg Technol Innovat Res* 2019; 6: 328–331.

Google Scholar

13. Kohn MD, Sassoon AA, Fernando ND. Classifications in brief: Kellgren-Lawrence classification of osteoarthritis. *Clin Orthop Relat Res* 2016; 474: 1886–1893.

Crossref | PubMed | Web of Science | Google Scholar

14. Boonstra AM, Schiphorst Preuper HR, Reneman MF,. et al. Reliability and validity of the visual analogue scale for disability in patients with chronic musculoskeletal pain. *Int J Rehabil Res* 2008; 31: 165–169.

Crossref | PubMed | Web of Science | Google Scholar

15. Wellmon RH, Gulick DT, Paterson ML,. et al. Validity and reliability of 2 goniometric mobile apps: device, application, and examiner factors. *J Sport Rehabil* 2016; 25: 371–379.

Crossref | PubMed | Google Scholar

16. Alghadir A, Anwer S, Iqbal ZA,. et al. Cross-cultural adaptation, reliability and validity of the Arabic version of the reduced Western Ontario and McMaster Universities Osteoarthritis index in patients with knee osteoarthritis. *Disabil Rehabil* 2016; 38: 689–694.

25. Paungmali A, O'Leary S, Souvlis T,. et al. Naloxone fails to antagonize initial hypoalgesic effect of a manual therapy treatment for lateral epicondylalgia. *J Manipulative Physiol Ther* 2004; 27: 180–185.

26. Paungmali A, O'Leary S, Souvlis T,. et al. Hypoalgesic and sympathoexcitatory effects of mobilization with movement for lateral epicondylalgia. *Phys Ther* 2003; 83: 374–383.

Crossref | PubMed | Web of Science | Google Scholar

27. Page P, Frank CC, Lardner R. *Assessment and treatment of muscle imbalance: The Janda approach*. Champaign, IL: Human Kinetics, 2009:184.

Google Scholar

28. Huang M-H, Yang R-C, Lee C-L,. et al. Preliminary results of integrated therapy for patients with knee osteoarthritis. *Arthritis Rheum* 2005; 53: 812–820.

Crossref | PubMed | Web of Science | Google Scholar

29. Maher S, Creighton D, Kondratek M,. et al. The effect of tibio-femoral traction mobilization on passive knee flexion motion impairment and pain: a case series. *J Man Manip Ther* 2010; 18: 29–36.

Crossref | PubMed | Google Scholar

30. Nordin M, Frankel VH. *Basic biomechanics of the musculoskeletal system*. 4th ed. Philadelphia, PA: Lippincott Williams and Wilkins, 2012.