

Benefits of Physical Therapy and Exercise in Osteoarthritis

Deyle GD, Henderson NE, Matekel RL, Ryder MG, Garber MB, Allison SC. Effectiveness of manual physical therapy and exercise in osteoarthritis of the knee. A randomized, controlled trial. *Ann Intern Med* 2000;132:173–81.

Study Overview

Objective. To evaluate the effectiveness of a combined regimen of physical therapy and exercise in patients with osteoarthritis of the knee.

Design. Randomized, controlled clinical trial.

Setting and participants. Eighty-three patients with osteoarthritis of the knee who were randomly assigned to receive treatment ($n = 42$; 15 men and 27 women [mean age, 60 ± 11 years]) or placebo ($n = 41$; 19 men and 22 women [mean age, 62 ± 10 years]). Study site was the outpatient physical therapy department of a large military medical center in Texas.

Intervention. The treatment group received manual therapy applied to the knee as well as to the lumbar spine, hip, and ankle as required. Therapy was provided by an experienced physical therapist with formal training in manual therapy. Patients in the treatment group also performed a standardized knee exercise program in the clinic and at home consisting of stretching, range-of-motion, and strengthening exercises. The placebo group received subtherapeutic ultrasound to the knee at an intensity of 0.1 W/cm^2 with a 10% pulsed mode. Both groups were treated at the clinic twice weekly for 4 weeks.

Main outcome measures. Distance walked in 6 minutes [1] and the sum of the function, pain, and stiffness subscores of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) [2]. Measures were assessed at the baseline visit and at 4 weeks, 8 weeks, and 1 year post-treatment. The incidence of knee arthroplasty at 1 year post-treatment also was assessed.

Main results. Clinically and statistically significant improvements in 6-minute walk distance and WOMAC score at 4 weeks and 8 weeks were observed in the treatment group but not in the placebo group. By 8 weeks, average 6-minute walk distances had improved by 13% and WOMAC scores had improved by 56% over baseline values in the treatment

group ($P < 0.05$). After controlling for potential confounding variables, the average distance walked in 6 minutes at 8 weeks among patients in the treatment group was 170 m (95% confidence interval [CI], 71 to 270 m) more than that in the placebo group and the average WOMAC scores were 599 mm higher (95% CI, 197 to 1002 mm).

At 1 year, patients in the treatment group had clinically and statistically significant gains over baseline in both walking distance and WOMAC scores. While 20% of patients in the placebo group had undergone knee arthroplasty, only 5% of patients in the treatment group had.

Conclusion

In patients with osteoarthritis of the knee, a combination of manual physical therapy and stretching, range-of-motion, and strengthening exercises may yield improvements in functional ability as well as in subjective measures of pain, stiffness, and function and may delay or prevent the need for surgical intervention. These improvements may persist well after the conclusion of clinical treatment.

Commentary

In this study, it is not possible to disentangle the benefit resulting from the manual physical therapy and the benefit resulting from the home and clinic exercise program. The treatment group received both types of care (physical therapy plus exercise), while the control group received neither. Future evaluation of the relative benefits of each modality should prove useful in assisting health care providers to identify the most beneficial regimen.

Applications for Clinical Practice

Health care providers should note the clinically and statistically positive results of this relatively low-cost intervention in improving the physical functioning of patients with osteoarthritis. Arthritis is the most common cause of disability in the United States [3]; one third of the population older than 62 years is thought to be affected by osteoarthritis of the knee [4]. As the aging of our population continues, optimizing the care of this cohort will become increasingly important.

References

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