

The Effectiveness of Extracorporeal Shockwave Therapy on Pain and Motor Function in Subjects with Knee Osteoarthritis A Systematic Review and Meta-Analysis of Randomized Clinical Trial

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Abstract : Background and Purpose: The effects of Extracorporeal Shockwave Therapy (ESWT) in the participants with knee osteoarthritis (KOA) were unclear on physical performance although its effects on pain had been investigated. This study aims to explore the effects of ESWT on pain relief and physical performance on KOA. Methods: The studies with the randomized controlled design to investigate the effects of ESWT on KOA were systematically searched using inclusion and exclusion criteria through seven electronic databases including Pubmed etc. between 1990 and Dec 2022. To summarize those data, visual analog scale (VAS) or pain scores were determined for measure of pain intensity. Range of knee motion, or the scores of physical activities including Lequesne index (LI), Knee Injury and Osteoarthritis Outcome Score (KOOS), and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) were determined for measure of physical performances. The first evaluate after treatment period was define as the effect of post-treatment period or immediately effect; and the last evaluate was defined as the effect of following period or the end effect in our study. Data analysis was performed using RevMan 5.4.1 software. A significant level was set at $p < 0.05$. Results: Eight studies (number of participant= 499) reporting the ESWT effects on mild-to-moderate severity (Grades I to III Kellgren-Lawrence) of KOA were qualified for meta-analysis. Compared with sham or placebo group, the ESWT group had a significant decrease of VAS rest score (0.90[0.12~1.67] as mean difference [95% confidence interval]) and pain score WOMAC (2.49[1.22~3.76]), and a significant improvement of physical performance with a decrease of the scores of WOMAC activities (8.18[3.97~12.39]), LI (3.47[1.68~5.26]), and KOOS (5.87[1.73~ 10.00]) in the post-treatment period. There were also a significant decrease of WOMAC pain score (2.83[2.12~3.53]) and a significant decrease of the scores of WOMAC activities (9.47[7.65~11.28]) and LI (4.12[2.34 to 5.89]) in the following period. Besides, compared with other treatment groups, ESWT also displayed the improvement in pain and physical performance, but it is not significant. Conclusions: The ESWT was effective and valuable method in pain relief as well as in improving physical activities in the participants with mild-to-moderate KOA. Clinical Relevance: There are the effects of ESWT on pain relief and the improvement of physical performance in the with KOA.

Keywords : knee osteoarthritis, extracorporeal shockwave therapy, pain relief, physical performance, shockwave

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