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The impact of home-based pulmonary rehabilitation on health related quality of life in patients with COPD: A systematic review and meta-analysis

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Participation in a pulmonary rehabilitation (PR) programme confers improvements in exercise capacity, health related quality of life (HRQoL) and breathlessness in people with chronic obstructive pulmonary disease (COPD). However, uptake to PR is poor and home-based exercise programmes may be one method of overcoming some of the barriers to participation in out-patient PR. There is, however, limited evidence regarding the effectiveness of home-based PR (HB PR). We conducted a systematic review and meta-analysis to examine the effects of HB PR on HRQoL in people with COPD compared with usual care or an education programme. Nine studies met the inclusion criteria for the meta-analysis. Meta-analyses showed significant improvements in HRQoL with a standardized mean difference of -0.64 (95% CI: -0.99, -0.30) in favour of HBPR. Sub group analysis of people with severe COPD showed a SMD of -0.62 (95% CI: -1.06, -0.18) in favour of HBPR. These results were not maintained in the long-term. Supervised or unsupervised HBPR is effective in improving HRQoL for people with COPD in the short-term. Offering HBPR may alleviate some of the barriers to accessing PR in a healthcare setting. Further research to explore the maintenance of these benefits in the long-term as well as the optimum method of delivery is required.

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Relationships among peak-knee flexion angle, knee moment, ankle moment and ground reaction force of Saudi hand-ball players in landing phase of single-leg jumping

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Background: ACL injury is a commonly seen knee injury in different sport activities. This non-contact injury may contribute to the excessive knee stress during the landing phase of single leg jumping. But, the mechanism of protection against this type of injury still not confirmed.

Purpose: This study aimed to detect the relationships among peak- knee flexion angle , knee moment, ankle moment and ground reaction force that may detect the mechanism of decreasing the knee joint stress and non-contact anterior cruciate ligament (ACL) injury during landing.

Material & Methods: A randomized cross section study with 9 healthy male elite hand-ball players from the first Saudi handball team of 2015 was conducted. The participants performed a single-leg landing from jumping on force plate in which the maximum angle of knee flexion (KFAPk) was detected. The knee-extensor moment (KM), ankle- planter flexion moment (AM) and ground reaction moment (GRM) of 3 successful landings for dominant extremity were measured using a three-dimensional motion analysis system (VICON; Bonita cameras, 250frames/s) and 2 force platforms (AMTI OR6, AMTI Inc., 1000Hz).

Results: Pearson product moment correlation coefficient was calculated among the mean of (KFAPk), (KM), and (AM) and (GRM). Results revealed that greater KFAPk related to both lesser KM ($r=-0.876$, $P<0.01$) and normalized GRM ($r=-.868$, $P<0.01$). We also found more knee flexion angle was related to greater AM ($r=0.777$, $P<0.05$).

Conclusion: Our findings indicated that with increase in the knee flexion angle there should be an automatic reaction of leaning forward to decrease the anterior shear stress on ACL.

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