

# Preventive Program for Optimal Performance in Elite Wheelchair Basketball Players



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## Abstract

Health intervention in adapted sport has been a critical issue in order to decrease musculoskeletal injuries. In this regard, shoulder injuries are a common problem among wheelchair basketball players (WB). Research in adapted sport injuries is increasing all over the years; however, it is necessary to implement protocols to treat and prevent injuries in wheelchair sports. Shoulder home-based preventive program has demonstrated to be useful for maintaining shoulder health conditions of WB players throughout their sport training regimes when preparing for an international competition. This allows it to be useful complementary tool in combination with teams' technical strategy.

**Keywords:** Adapted sport; Paralympic sport; Wheelchair injuries; Shoulder biomechanics; prevention; Exercise

**Abbreviations:** SHEP: Shoulder Home-based Exercise Program; WB: Wheel chair Basketball

## Introduction

In order to improve the performance of elite wheelchair basketball players, experts in sport and health science have suggested exercise programs to prevent and treat injuries. Studies suggest that exercise program is a useful tool as an element to prevent and to treat shoulder pain as a result of injuries [1,2]. Being biomechanical aspects, related to mechanics of the sport, the impairment type and level a standing point to develop a strategy. Practical guidelines and recommendations are published to the prevention and management of exercise in manual wheelchairs users; however, only a few evidence of general recommendations for wheelchair basketball athletes. In this regard, some researches [3,4] show how exercise program could influence in SP in wheelchair population. On other hand, previous researches are developed in elite WB population including prevention of shoulder injury in collegiate WB payers [5,6].

## Interventional Study

An interventional study show that a shoulder home-based exercises program (SHEP) [7] appears to be useful tool for maintaining shoulder conditions of WB players throughout their sport training regimes when preparing for elite WB competitions, such as the Paralympic Games. In a group of WB players who

received a 10 week SHEP, the changes in SP and ROM were not significantly different from the changes observed in the CG that did not receive the intervention. For both groups, no increase in neither SP nor shoulder injuries was observed, so the functionality and the health of the shoulder were preserved. However, in females WB players there were a significantly reduction of shoulder pain after 10 weeks of the SHEP intervention and an increase of the shoulder functionality.

## Discussion

Preventive programs for optimal performance establish the incidence and severity of the problem, the etiology and mechanism of injury, implement the preventive measure and determine the effectiveness of the intervention. A preventive program for wheelchair basketball appears as a convenient tool to maintain the shoulder health condition during the training process working in line with teams' technical strategy, where players realize a high level of training [7], high impact loading and repeated actions that can develop injuries. In this regard, WB players require regular evaluations, also, multidisciplinary team need to be coordinated to implement and promote an adequate intervention, being necessary the synergy between clubs and

institutions. Further perspectives needed to develop technological innovations that include a protocol with aspects related to the musculoskeletal condition in wheelchair athletes. Also, is needed to determine the effectiveness of the SHEP in a larger sample and include prevention programs in the junior players' preparation.

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