

Changes in Physical and Physiological Characteristics after Deployment to Afghanistan

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Soldiers of the 101st Airborne Division (Air Assault) have experienced multiple deployments in recent years. Deployment missions and combat environment change constantly for each deployment. It is essential to understand the physical and physiological impact of deployment.

Purpose: To assess changes in physical and physiological characteristics during deployment to Afghanistan.

Methods: A total of 35 active duty Soldiers from the 101st Airborne Division (Air Assault) volunteered (Age: 24.8 ± 4.9 years; Height: 174.4 ± 8.6 cm; Mass: 76.6 ± 13.7 kg; Pre Test-Deployment: 207 ± 76 days; Deployment: 350 ± 18 days; Deployment-Post Test: 19 ± 18 days). Testing consisted of body mass (kg), body composition (%BF), eyes-closed single-leg balance (N), knee flexion/extension and ankle inversion/eversion strength (%BW), anaerobic power/capacity (W/kg), and aerobic capacity (ml/kg/min) and lactate threshold (%VO_{2max}). Paired t-tests with p-value of 0.05 were used for statistical analysis.

Results: Anaerobic power (Pre: 11.7 ± 2.5 W/kg, Post: 12.5 ± 2.6 W/kg, $p = 0.019$) and lactate threshold (Pre: 77.1 ± 8.9 %VO_{2max}, Post: 82.0 ± 7.7 %VO_{2max}, $p = 0.016$) increased significantly post-deployment. Eyes-closed single-leg balance in medial-lateral direction (Pre: 7.9 ± 3.6 N, Post: 9.7 ± 5.8 N, $p = 0.032$) and isometric ankle eversion strength (Pre: 42.8 ± 9.6 %BW, Post: 36.4 ± 7.0 %BW, $p = 0.001$) worsened significantly post-deployment.

Conclusions: The current study has demonstrated changes during an Afghanistan deployment for various physical and physiological characteristics. Soldiers could utilize the results of this study to augment training prior to and while deployed. Specific exercises such as balance and ankle strengthening exercises may minimize the physical and physiological changes and assist with musculoskeletal injury prevention while deployed.

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