



**Manchester
Metropolitan
University**

[Read, D](#) and [Onambele-Pearson, G](#) (2014) Impact of Playing Level on Vascular Adaptation in Rugby League Players. In: The 15th Annual British Association of Sport and Exercise Science (BASES) Student Conference, 08 April 2014 - 09 April 2014, Portsmouth, UK.

Downloaded from: <http://e-space.mmu.ac.uk/625805/>

Please cite the published version

<https://e-space.mmu.ac.uk>

Impact of Playing Level on Vascular Adaptation in Rugby League Players

¹Dale Read & ¹Gladys Onambele-Pearson

Affiliation

¹Institute for Performance Research, Manchester Metropolitan University, Cheshire, United Kingdom.

ABSTRACT

Purpose: There is substantial evidence for vascular adaptation in endurance athletes. However, little research exists for athletes that use a combination of resistance and endurance training. This study aimed to assess the vascular adaptation in professional rugby league athletes in comparison to age-matched university rugby league players. **Methods:** Players from the same professional club ($n = 9$) and university ($n = 9$) were recruited. Heart rate, diameter and blood flow in the carotid artery were assessed at rest using Doppler ultrasonography and repeated immediately following a sport specific exercise protocol lasting ~23 min. **Results:** The professional players displayed a significantly lower heart rate at rest ($P = 0.003$) but all other ultrasound measures were not significantly different between the groups. The exercise-induced change was not statistically significant for arterial diameter and heart rate, but the professional players exhibited a smaller relative increase in blood flow ($P = 0.021$). There was a significant positive association between blood flow and fat free mass in the professional players at rest ($r = 0.817$, $P = 0.004$) and post exercise ($r = 0.805$, $P = 0.004$). Conversely, the university players displayed a significant negative relationship at rest ($r = -0.580$, $P = 0.050$), though not post exercise ($r = -0.442$, $P > 0.05$). **Conclusion:** Our data are the first to suggest the existence of chronic vascular adaptations to playing rugby league, improving from university to professional level.

Key Words:

Carotid artery; Arterial diameter; Blood flow; Mixed Resistance-Endurance training