A comparison of complete blood counts of capillary and venous blood samples in active individuals

The objective of this study is to assess the agreement of two blood sampling analyses (capillary and venous) prior to and after moderate to intense exercise, as well as to explore potential biological sex differences between these analyses. It was hypothesized that capillary and venous blood sampling are congruous and as a result, capillary blood can be utilized for patients who present difficulties regarding venous blood draws. A study was conducted on healthy individuals, both male and female, between the ages of 18 and 35, and consisted of three separate visits in which venous and capillary blood were drawn during visit three at three timepoints: at rest, immediately following a 40-minute exercise protocol, and 30 minutes following completion of exercise. A complete blood count, examining various WBCs was performed on each of the samples, concluding a strong correlation between venous and capillary blood sampling. The correlation coefficients for lymphocyte, neutrophil, monocyte, and overall white blood cell counts in venous and capillary blood are 0.992, 0.992, 0.996, and 0.987, respectively. There were no statistically significant differences between male and female capillary and venous blood at rest, 0 minutes post-, and 30 minutes post-exercise. As expected, exercise induced a strong immune response, which gradually subsided during recovery. This data suggests that capillary blood sampling is an adequate alternative to venous blood sampling in active, young, and healthy individuals. Further research should be conducted on disease patients or those with inaccessible veins, such as geriatric, bariatric, oncology, and burn patients.