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Effects of swimming on erythrocyte rheological properties
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Exercise and lactate usually change blood rheology but, effect of swimming on blood rheology is not clear. Blood lactate concentration increases after 400-meter freestyle swimming. In the hemorheological studies, determination of the erythrocyte deformability and aggregation facilitates the evaluation of rheological behaviours of the erythrocytes. The present study was performed to investigate the effects of acute swimming exercise on erythrocyte deformability and aggregation. Seventeen male university swimmers participated in the study. For 400-meter freestyle swimming, participants were asked to swim as fast as they could. Blood lactate concentration, erythrocyte lipid peroxidation and plasma protein oxidation levels, erythrocyte deformability and aggregation, and several haematological parameters were investigated after swimming and they were compared with pre-exercise values. Erythrocyte lipid peroxidation and plasma protein oxidation were unchanged with swimming. Blood lactate concentration increased after 400-meter swimming ($p < 0.001$). Erythrocyte aggregation increased after acute swimming ($p < 0.01$) while erythrocyte deformability was not change. There were no correlations between blood lactate and erythrocyte hemorheological properties before and after swimming. In conclusion, we found that erythrocyte aggregation increased after acute swimming. Further studies are needed to reveal the late effects of acute swimming and to elucidate the effect of swimming different distances on erythrocyte rheological properties.

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