

This study selected 22 high-level orienteering athletes at the national first-class level or above (expert group) and 22 members from university orienteering clubs (novice group), using electroencephalogram (EEG) acquisition technology to explore the cognitive processes of map perception-representation-memory-thinking in athletes of different levels, providing valuable practical experience and theoretical guidance for improving spatial cognitive abilities of individuals and even groups, and enhancing individuals' navigation and decision-making abilities in complex environments.