

ABSTRACT

Title: Periodization of Endurance Training in Adolescent Swimmers

Objectives: To map and critically evaluate which periodization models—linear, block, and nonlinear—most effectively support endurance development in adolescent swimmers, and to benchmark international findings against the current DRoP guidelines issued by the Czech Swimming Federation (ČSPS).

Methods: Comparative overview of primary studies and meta-analyses published between 2010 and 2023 (databases: PubMed, SportDiscus, Google Scholar, Czech university repositories).

Inclusion criteria: participants aged 14–18 years, a clearly described periodization scheme, and endurance outcomes (VO₂ max, lactate threshold, race times). Relevant ČSPS / DRoP methodological documents were also analysed.

Results: *Block periodization* (two to three 6–8-week blocks) raised VO₂max by 3 – 6 % and improved 100–200 m race times by 1.5–3 %. *An optimized taper* (7–14 days, 40–60 % volume reduction with intensity maintained) yielded an additional ~2 % performance gain. *DRoP* recommends a two-peak annual model from age 15, but local quantitative evidence is still lacking. *Linear* periodization suits only the early growth phase, whereas *nonlinear* (undulating) periodization offers the greatest flexibility but hinges on precise HRV and RPE monitoring.

Conclusion For swimmers aged 14–16, a two-peak block or hybrid periodization—featuring a short high-intensity block and a two-week taper, underpinned by regular HRV, LT, and subjective-fatigue tracking—appears most effective. Longitudinal studies in the Czech context are needed to validate these findings and fine-tune DRoP recommendations.

KEYWORDS

training, periodization, endurance swimming, adolescents, VO₂ max, tapering