

Technical Exercise Proficiency as a Programme Foundation for the Development of Judo Specific Muscular Strength: A Case Study in S&C Novice Judokas

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Introduction

- Maximal strength through the kinetic chain is fundamental to judo performance, which supports the use of compound strength & power exercises.
- Progression of these exercises requires technical competency as external load increases.
- A key area for novice judoka entering structured S&C.
- Practical, standardized methods for monitoring and managing technical progression during real-time coaching remain limited.
- This study assessed effectiveness of a novel, subjective in-training method for monitoring Power Clean (PC) technical progression.
- A second aim was to examine the relationship between the technical progression measure, attendance and developing maximal strength.

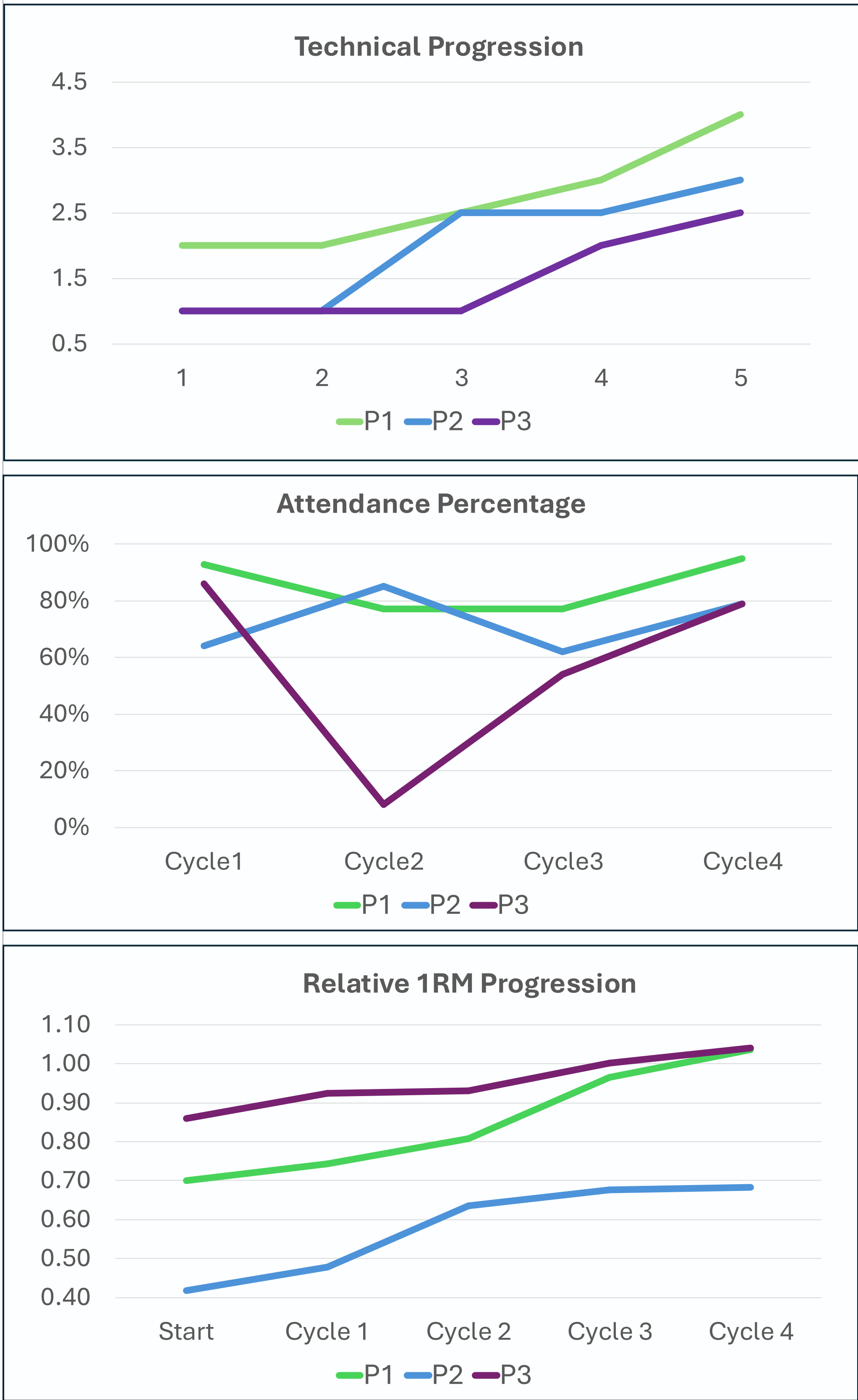
Methods

- Three male club judoka (age: 17.7 ± 0.6 yrs; body mass: 97.3 ± 28.9 kg) completed a five-month structured introductory S&C programme comprising 4 training cycles (Table 1).
- Metrics:
 - Percentage expected attendance.
 - Subjective PC technical competence using a five-point scale (1 = novice; 5 = competent) (Table 3). Based on six observable technical criteria derived from UKSCA Technical Model (Table 2). Technical Assessments were conducted by the S&C coach, and embedded within the coaching process.
 - Strength progression was monitored using training load predicted 1RM during cycles 1–3 and RM tests in cycle 4. Relative predicted 1RM accounted for differences in body mass.
 - Technical development was prioritized during the initial two cycles, external load progression was linked to technical competency.
- Attendance, technical competency and predicted 1RM were tracked to examine their relationships.

Cycle	Primary Emphasis
Cycle 1	Technical foundation -develop safety and proficiency with gradual introduction and progression of load
Cycle 2	Technical challenge – begin to challenge technique with structured load progression
Cycle 3	Load progression - the primary focus with technical competency maintained
Cycle 4	Maximal strength - development of training intent and effect without compromising technique. Link training to 3RM aim

Table 1. Structured five-month introductory S&C programme

Results



- Training attendance was reflected in the rate and extent of Power Clean technical progression (Figures 1–2).
 - P1 - attendance 86%, technical progression 2 to 4
 - P2 - attendance 73%, technical progression 1 to 3.
 - Both achieved a 2-point improvement.
 - P3 -attendance 59%, technical progression, 1 to 2.5.
- Differences in technical development were subsequently reflected in PC strength development (Figures 3).
 - P1 – relative predicted 1RM increased by 32.7%.
 - P2 – relative predicted 1RM increased by 38.2%.
 - P3 – relative predicted 1RM increased by 17.3%.
 - P 1 and 2 - greatest technical progression and twice the relative strength improvement compared to P3.
 - P3 - lowest training exposure, least technical progression and smallest increase in relative predicted 1RM.
- Attendance provided exposure to the technical development process, while the extent of technical progression was reflected in subsequent strength development.
- The novel, in-training technical proficiency measure reflected differences in training attendance and subsequent maximal strength development in the PC, in these 3 individual athletes.

Technical Assessment Criterion		Applied Coaching Observation
1	Start Position and First Pull	- Hand grip - Foot position - Hips to shoulder position - Head position - Controlled BB lift - Knee extension - Hip & trunk maintained
2	Transition and Jump Position	- Transition, knee flexion, hip extension - Into the jump position - Shoulders over BB
3	Second Pull and Extension	- Rapid, coordinated triple extension - Followed by powerful shrug - With fully extended arms
4	Turnover, Receiving Position and Recovery	- Rapid drop under the bar - With swift turnover of hands to high elbow position - Trunk bracing and controlled recovery to standing .
5	Barbell Trajectory, Balance and Postural Control	- Clear control of BB path - Correct distribution of load through the feet. - BB load effectively managed through full ROM
6	Training intent and effect	- Technique focus - Combination, technique and load - Training intent focus

Table 2. Technical Assessment Criteria

Score	Classification	Technical Classification
1	Novice	Four or more technical criterion below the standard.
2	Developing	Three or more technical criteria require development
3	Intermediate	Two technical criteria require development
4	Acceptable	One technical criterion requires refinement
5	Competent	All assessed technical criteria are consistently demonstrated, along with the capability to train with intent (Criterion 6) and independently.

Table 3. Five-Point Technical Proficiency Scale

Practical Applications
- Key findings: - The applied five point technical proficiency scale showed practical potential for real-time monitoring of the PC in this case study. - Recommendation: - Future research to establish accuracy, reliability and standardization of the applied technical assessment methods.