

## **Serving a brief-contact cognitive behavior therapy intervention in youth tennis using a single-case design**

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**Serving a Brief Contact CBT Intervention in Youth Tennis Using a Single-Case Design**

**Abstract**

Brief CBT is planned brief therapy designed to influence a specific target behavior (e.g., sport performance) with the lowest investment of cost and time. We report a brief CBT intervention delivered to improve serve performance in county-level youth tennis players (three male, one female; *Mean* = 14.90 years). Following an assessment of athlete needs, we implemented a brief contact intervention involving diaphragmatic breathing. The intervention was delivered across two ‘structured’ sessions, with the athletes having access to the sport psychologist between sessions as required. To assess the effectiveness of the intervention, we implemented a single-case withdrawal design. Results indicated the intervention had a positive effect on performance, with athletes first serve percentage increasing significantly (3.91%,  $p < .05$ ). Results also indicated a minimum pre-performance routine time (routine > 2seconds) might be required for effective performance outcomes. Finally, we offer reflections on the delivery and implementation of a single-case design, while navigating avenues of professional development.

## 1 ***Context: Psychological Model of Practice and Case Philosophy***

2           Brief cognitive behavior therapy (CBT) means planned, brief therapy to achieve the most  
3 benefit with the lowest investment of sport psychologist time and the lowest financial cost to the client  
4 (Curwen et al., 2018). A perhaps surprising facet of brief CBT is that the definition places no time-  
5 period on the length of therapy; rather, the emphasis lies on facilitating the achievement of the aims,  
6 attitudes and values of the client and the sport psychologist. For example, brief CBT might comprise  
7 six sessions of 50 minutes, after which time, the sport psychologist and client assess progress and plan  
8 future sessions as necessary; however, sessions might also be of different lengths or spaced according  
9 to the needs of the client (e.g., one two-hour on-pitch session). This flexibility in time works through  
10 the clients' goals and the cognitive conceptualization created between the client and the sport  
11 psychologist. The nature of competitive sport and working with athletes around training and  
12 competition schedules can favor delivering (brief) CBT. CBT perspectives assert that individuals'  
13 thoughts, emotions, and behaviors interrelate (McArdle & Moore, 2012; McCarthy et al., 2023). By  
14 working collaboratively with a psychologist, clients may learn to recognize, monitor, and adapt their  
15 cognitive activity to produce a desired change in behavior (Didymus, 2018).

16           The case study philosophy is therefore grounded in a single-case design (Barker et al., 2011).  
17 Single-case designs allow a rigorous evaluation of interventions with few participants (Kazdin, 2019).  
18 Although sparsely used in sport, single-case designs are critical to facilitating an understanding of  
19 effective applied practice by explicitly targeting and evaluating a mechanism and the behavior of change  
20 (Barker et al., 2013). The aim of this paper is to present a brief CBT intervention using a single-case  
21 design using predominantly confessional tales. In doing so, we bring to life the case and challenges  
22 faced, highlighting some realities of applied practice for interested practitioners.

23           At the time of the intervention, I (first author) was a final year trainee sport and exercise  
24 psychologist on a British professional doctorate programme working in tennis and swimming. My  
25 experience in the tennis environment was three-fold, initially as an athlete (previous national  
26 champion), then as a coach (LTA Level 3 coach, coaching to support my psychologist training) and  
27 finally as a sport psychologist. I was being supervised by the director of the professional doctorate

28 programme (second author) who approached supervision from a base of cognitive behaviour and  
29 person-centered therapy; emphasizing the importance of learning by experience to acquire competence.

30 Individual predispositions often guide case philosophy. I (first author) consider myself an  
31 inquisitive individual, driven by, and drawn to evidence, and someone who strives for perfection. Using  
32 a single-case design satisfied these dispositions and, more truthfully, advocated by my supervisor  
33 (second author). Psychologists' philosophy of practice is heavily shaped by their learning and practical  
34 experiences (Poczwadowski et al., 2014). Therefore, although the intervention developed was  
35 grounded in CBT, the delivery was further underpinned by humanistic principles in which the client-  
36 psychologist is of central importance (Rogers, 1959). This holistic approach reflects my desire for  
37 athlete-centered practice that views athletes as people and performers.

### 38 *The Case*

39 The intervention occurred at a tennis venue in Britain. During collaborative conversations  
40 between the squad (group of four athletes) and coach, they had identified performance difficulties  
41 concerning tennis first serve performance. Despite increases in athletes' skill (e.g., technical  
42 proficiency) and serve quality (e.g., speed, points won), athletes' first serve percentage remained at an  
43 unsatisfactory level in competitive performances. Performance difficulties had been associated with the  
44 addition of 'pressure' or 'stress' in competitive environments, as difficulties in execution were not  
45 apparent during training. They then brought these concerns to the sport psychologist as an avenue for  
46 exploration.

47 Four youth athletes ( $M_{age} = 14.90$  years, age range = 14-16 years,  $M_{experience} = 4.55$  years, range  
48 2 to 8 years) participated. Athletes were considered 'sub-elite' using Swann et al.'s (2015) classification  
49 system as they were competing at a county level (a talent-development level below national and regional  
50 level). Participants were selected based on the following criteria: 1) the coach identified performance  
51 difficulties not perceived to be related to skill-ability; 2) the athlete agreed and/or self-reported a  
52 performance difficulty; 3) the athlete was eager to participate with both athlete and parent willing to  
53 provide informed consent (BPS, 2018).

### 54 *Assessment and Formulation*

55 A critical feature of single-case design is accurately defining and assessing the occurrence of  
56 target behaviors (Kazdin, 2011). Two target behaviors were identified: 1) first serve percentage; the  
57 percentage of successful (in) first serves, and 2) first serve routine time; the time-taken between the  
58 servers' feet being static behind the baseline and the serve contact point. First serve percentage, as the  
59 performance difficulty identified by athletes and the head coach was an essential assessment marker.  
60 We acknowledge several variables (e.g., speed, spin, weather) may influence serve percentage;  
61 however, because of resourcing (e.g., no access to speed data) and literature evidencing the effect of  
62 first serve percentage on match outcome (see Abidin & Raslan, 2020), purely assessing serve percentage  
63 seemed a satisfactory target behavior. The serve is the only closed-skill in tennis (Hernandez-Davo et  
64 al., 2014). Research investigating closed-skill performance (e.g., golf, diving, archery) indicates a  
65 relationship between pre-performance routine stability and performance outcome (e.g., Bell et al., 2010;  
66 Lidor, 2012). Pre-performance routines therefore appeared an appropriate target mechanism for a  
67 psychological intervention (as a facilitator of change) and were also measured (Cotterill, 2010).

68 Athlete match-charts from the nine-month period before the intervention were used to report  
69 first serve percentage, with at least two matches occurring in the previous month. Athletes first serve  
70 percentage averaged 53.56% ( $SD = 4.32$ ,  $range = 47-64\%$ ) a success-rate considered unlikely to  
71 facilitate positive match outcomes (Kovalchik & Reid, 2017). Baseline data were visually inspected to  
72 satisfy stability requirements for single-case research (Lobo et al., 2017). Data on athletes' first serve  
73 routine time was gathered during the final two matches of each player's data set. Large fluctuations in  
74 athletes' first serve routine time were apparent, with routines ranging from 1.8-9.1 seconds. Literature  
75 has highlighted variance in pre-performance routine time based on event significance (e.g., longer  
76 routines in more significant moments; Jackson, 2003); however, visual analysis and athlete discussions  
77 suggested this was not the case.

78 Single-case design and the sport psychology domain more broadly advocate using triangulation  
79 during the assessment phase (Barker et al., 2011; Taylor, 2017). Gaining additional insight was critical  
80 to ensuring any intervention designed was complementary towards athletes' existing behaviours  
81 (Cotterill, 2011). Informal, semi-structured interviews (e.g., sessions) were held with each player, using  
82 a short list of questions and probes intended to facilitate a shared understanding of presenting difficulties

83 (e.g., why had they raised serve percentage as a concern?) and current behaviors (e.g., what were they  
84 currently doing before points? why were they doing it?). Interviews revealed athletes engaged  
85 irregularly in popularized PPR activities (e.g., ‘I sometimes bounce the ball a few times’) and had  
86 limited awareness or understanding of the function of these behaviors (e.g., ‘well... the pro’s do it?’).  
87 In relation to performance difficulties, all four athletes discussed the importance of their serve to their  
88 general performance, perceiving the serve as a ‘springboard’ to the rest of their game.

89         A tentative working formulation was developing using Wills and Sanders (2013) protocol.  
90 Negative automatic thoughts concerning the importance of winning were perceived to underpin  
91 emotional responses (e.g., anxiety) that resulted in performance difficulties. Anxiety resulted in low  
92 pre-performance routine consistency, over-arousal (psychological tension) and poor attentional focus  
93 (Englert et al., 2014; Gorgulu, 2019). In first serve performance, this was observed in a range of  
94 behaviors including but not limited to: ball toss inconsistency, disrupted rhythm to the service motion,  
95 or poor tactical intention. The intervention therefore comprised a short pre-performance routine  
96 intended to disrupt this sequence, with reduced anxiety and increased routine consistency anticipated to  
97 improve performance (Lautenbach et al., 2015). The formulation and assessment data were shared with  
98 athletes during brief meetings (approx. 10-15 minutes per athlete). Each athlete was provided with their  
99 individual data set (e.g., first serve percentage and pre-performance routine time), before being shown  
100 the formulation. Athletes amended or adjusted the formulation if they felt it was appropriate (e.g.,  
101 individualized negative automatic thoughts). Closing points of discussion centered on establishing the  
102 athlete and sport psychologist's role in the intervention. Such collaborative empiricism was consistent  
103 with the psychological model (Didymus, 2018).

#### 104 ***Intervention Design and Content***

105         A single-case withdrawal (A-B-A) design involved an intervention being introduced and then  
106 removed (Barker et al., 2011). Withdrawal designs enable psychologists to isolate the effect of an  
107 intervention (Smith, 2012). Such control is appealing in a youth sport context where athlete  
108 development (e.g., skill ability) is continuous and often rapid, and several contextual demands emerge  
109 (e.g., weather). Using a withdrawal design could also determine whether intervention effects are

110 maintained when an intervention is absent, or if long-term engagement in intervention components is  
111 required (Kazdin, 2019).

112         Several psychological skills have been presented as suitable for pre-performance routines (e.g.,  
113 imagery; Andersen, 2009; Barker et al., 2020). To select an appropriate strategy, we considered any  
114 psychological strategy that: 1) met contextual demands (e.g., could be applied in the 20-second window  
115 between points without being burdensome), 2) was suited to athletes developmental stage (e.g.,  
116 adolescents), and 3) was evidence-informed and 4) suited athlete needs (Anderson, 2000; Vella et al.,  
117 2021). Discussions between the authors promoted maintaining simplicity in intervention content, while  
118 accounting for athlete preferences and engagement (Dryden, 2009).

119         The authors agreed on a ‘short-list’ of psychological strategies that met components one to  
120 three before presenting these to the athletes. Collectively, we agreed on using deep, or diaphragmatic  
121 breathing, which involves slowing one’s breathing rate, with the exhalation period being longer than  
122 the inhalation period (Kahander & Pepper, 1998). Breathing strategies (e.g., deep breathing) are  
123 effective methods of reducing anxiety, commonly integrated in CBT and sport-based interventions  
124 because breathing disrupts the CBT cognition-emotion-behavior process (Gosch et al., 2006; Gropel &  
125 Beckmann, 2017). Reducing anxiety (and introducing a pre-performance routine) was anticipated to  
126 enable athletes to achieve a more functional attentional focus in competitive environments, similar to  
127 those experienced in training, improving performance.

### 128 ***Intervention Implementation and Delivery***

129         Sport psychology literature intuitively discusses the importance of using progressive models  
130 when introducing psychological skills, increasing difficulty, as would be the case for other learning  
131 (e.g., motor skills; Farrow & Robertson, 2017). The intervention therefore comprised three phases with  
132 specific learning objectives: 1) off-court psychoeducation, designed to facilitate understanding and skill  
133 development; 2) on-court applied integration, intended to enable the applied application of developed  
134 skills; 3) implementation in competitive performance (assessment), to assess intervention efficacy. The  
135 intervention was followed by 4) a withdrawal phase.

### 136 ***Off Court Psychoeducation***



137 Psychoeducation is a critical feature of effective CBT, particularly among youth athletes  
138 (McArdle & Moore, 2012). Athletes attended a one-hour off court psychoeducation workshop. We  
139 considered it best practice (logical practically and sound ethically) to allow athletes the opportunity to  
140 develop the skill in a controlled, comfortable environment and so the session took place in a quiet room  
141 at the venue (Birrerr et al., 2010). The workshop began with information around the nature, benefits and  
142 applicability of diaphragmatic breathing, consistent with previous research (Lautenbach et al., 2015;  
143 Mesagno & Mullane-Grant, 2010). Next, in the practical component of the workshop, athletes were  
144 taught diaphragmatic breathing. Several ways to teach deep breathing effectively to children and  
145 adolescents exist (e.g., Kahander & Peper, 1998; Tuen, 2005). Orlick's (2007; 2010; 2011) model of  
146 delivery was selected because, on a practical level, Orlick provided two interactive strategies increasing  
147 psychological flexibility, and the approach has been used in sporting contexts (Marcia, 2014). The first  
148 strategy, 'jelly belly', involves observing physiological movement (e.g., hand on stomach) with  
149 imaginary cues relative to age and stage. The second involves using physical objects (e.g., balloons or  
150 clothes) to observe how breathing can differ and the physical (e.g., blowing balloon) and emotive (e.g.,  
151 feeling anxious) impacts that may have. The approach felt congruent with the first authors'  
152 communication style with this population (e.g., creative, interactive, energetic) while also resonating  
153 with their own experience of learning breathing strategies as an adolescent athlete. At the end of the  
154 workshop, athletes received a take-home sheet covering session content and providing cues for practice  
155 (supplementary material).

156 ***On Court Applied Integration (in practice)***

157 Psychologists are encouraged to work with athletes to integrate psychological skills into  
158 performance (McCarthy et al., 2010). Approximately two-weeks after the workshop, athletes vocalized  
159 a perceived readiness to apply skills on-court. During this period, athletes were regularly encouraged to  
160 practice diaphragmatic breathing at home and offered opportunities to ask questions (Harwood et al.,  
161 2004). A two-hour on-court session was arranged for delivery including: an extended match warm-up,  
162 serve practice integrating diaphragmatic breathing and competitive play (e.g., closed, and open point).  
163 Play was interspersed with discussion/de-brief periods (see Table 1).

164 < Insert Table 1. About Here >

165 Pre-performance routines are highly individualized processes. Athletes were encouraged to use  
166 diaphragmatic breathing as their final ‘action’ before serving. This time-element was intended to  
167 maximize the positive effects of diaphragmatic breathing (e.g., muscle relaxation) and minimize the  
168 opportunity for anxiety or negative-automatic-thoughts to re-emerge. Breathing could be completed in-  
169 conjunction with another behavior (e.g., bouncing the ball) or singularly (e.g., immediately prior to the  
170 beginning of the service motion). Regarding frequency, athletes were supported to find how many  
171 diaphragmatic breaths was comfortable for them, and enabled them to begin the point with the desired  
172 degree of activation (e.g., attempting to locate optimal zone of functioning). For the athletes, this ranged  
173 between one and three breaths. As the intervention was targeting diaphragmatic breathing, limited  
174 adaptation was made to other aspects of athletes' pre-existing routines or behaviors. For example, for  
175 an athlete with limited pre-performance routines before the intervention, using diaphragmatic breathing  
176 was considered proficient. For athletes with pre-existing routines, breathing was integrated at the end  
177 of their routine; however, conversations with athletes and the coach indicated that they were encouraged  
178 to have one instance of instructional self-talk regarding serve location/spin (e.g., kick wide). No efforts  
179 were made to control for these factors, to explore the effect of diaphragmatic breathing on serve  
180 performance. Had the intervention been conducted with more experienced athletes, or with a broader  
181 intention, factors such as focus of attention (e.g., eye location), use of imagery or structure to routine  
182 could be considered. Throughout the on-court session players were provided with verbal feedback  
183 regarding observed behaviors (e.g., engagement in breathing) and outcomes (e.g., what was happening  
184 to serve percentage), alongside being prompted to discuss their thoughts and feelings regarding  
185 implementation (see Table 1). Consistent with the off-court workshop, athletes received a take-home  
186 worksheet and were provided with encouragement by the psychologist and coach.

### 187 ***Implementation in competitive performance (assessment)***

188 When athletes felt suitably proficient and comfortable with the skill (e.g., completed sufficient  
189 practice) they were encouraged to use it during competitive performances. Variation in this phase was  
190 apparent between athletes, ranging between two and five weeks, highlighting the importance of  
191 accounting for individual differences when implementing interventions (Vissek et al., 2011). The first  
192 author attended competitive events in which the athletes were performing. Athletes were aware of the

193 psychologists' attendance, with attendance a typical occurrence, hoped to alleviate the risk of changes  
194 to athletes' anxiety from audience effects. For each athlete, data was collected by the psychologist for  
195 six-to-eight matches depending on athlete results (e.g., progressing in events to get more matches) and  
196 length of match (e.g., Fast-4 vs. full-set scoring). Six-to-eight matches was considered an appropriate  
197 number of data points (Barker et al., 2020). Data was collected from an appropriate distance to minimize  
198 interference, while also ensuring the required visibility was maintained.

### 199 ***Withdrawal Phase***

200         The withdrawal phase entails actively removing the intervention (Gast & Baekey, 2014). For  
201 this intervention, withdrawal involved asking players to not engage in pre-serve breathing routines.  
202 Athletes discussed perceiving the use of breathing to improve first serve percentage and performance  
203 before any evaluation of the data had been conducted to corroborate or deny this sentiment. High levels  
204 of apprehension and hesitancy to not engage in behaviors, particularly in events with any meaningful  
205 significance, were shared by the athletes; however, having a withdrawal phase was critical for assessing  
206 intervention efficacy, raising a significant ethical issue often cited as problematic in single-case designs  
207 (Kazdin, 2019). On one hand, psychologists need to balance the fields' requirement for evidence-  
208 informed practice and a client's right to understand the underlying mechanisms and effectiveness of  
209 proposed interventions, against the athletes needs (e.g., to perform optimally) and ethical requirements  
210 to do-no-harm (Barker et al., 2011; BPS, 2018). Transparency about these dilemmas with the athletes  
211 was critical. Collaboratively, the positives and challenges of introducing a withdrawal phase were  
212 discussed. Discussions with the athletes highlighted that practice-matches would be an appropriately  
213 low-risk environment for them to engage in the behavior, while holding satisfactory importance in  
214 inciting feelings of anxiety (Taylor, 2017). Each athlete participated in six practice matches across a  
215 three-week period. Before each practice match, athletes were reminded by the psychologist that while  
216 there were no negative consequences of engaging in diaphragmatic breathing they should avoid doing  
217 so where possible.

### 218 ***Intervention Evaluation***

219         Psychologists are professionally, personally, and ethically required to undertake thorough  
220 evaluations of practice (BPS, 2018). Evaluation of the present intervention was first based on statistical

221 analysis (Kazdin, 2011). A repeated-measures ANOVA was conducted to compare first serve  
222 percentage at baseline (b), post-intervention (p) and at withdrawal (w). Mauchly's test of sphericity  
223 indicated that the assumption of sphericity had not been violated ( $p > .05$ ). There was a statistically  
224 significant effect on first serve percentage  $F(2,44) = 13.61, p < .001$ . Post hoc analysis using Bonferroni  
225 correction revealed that first serve percentage post-intervention ( $59.13 \pm 3.40$ ) was significantly larger  
226 than at baseline ( $55.22 \pm 4.12, p < .001$ ) and withdrawal ( $55.65 \pm 3.19, p < .001$ ). The difference between  
227 baseline and withdrawal was not statistically significant ( $p > .05$ ).

228 Visual analysis suggested that, while statistically significant, the withdrawal phase did not  
229 result in a return to the baseline (see fig 1-4 for individual athlete graphs). Such a finding may be a  
230 consequence of athletes sub-consciously using diaphragmatic breathing, or may be an indicator that the  
231 intervention was not the true determinant of change (e.g., skill development). A further consideration  
232 was if changes to first serve percentage held meaningful significance (Knusdon, 2009). Anecdotal  
233 evidence from athletes and the coach suggested a perceived interaction between first serve percentage  
234 and likelihood of success. Tennis match analysis suggested that while several other factors influence  
235 match outcome (e.g., first serve win percentage) an increase in first serve percentage by one-two  
236 percentage points increases match-win probability (Abidin & Ruslan, 2020; Barnett et al., 2008). The  
237 mean increase in first-serve percentage post intervention was 3.91% suggesting meaningful significance  
238 for all players involved in the intervention.

239 < Insert Figures 1,2,3,4 About Here >

240 Similarly, a repeated-measures ANOVA was conducted to compare changes in serve routine  
241 time at baseline (b), post-intervention (p) and at withdrawal (w). There was not a statistically significant  
242 effect on routine time between groups,  $F(2,205) = 4.00, p = .19$ . Findings thus suggest the intervention  
243 had no influence on athletes' routine time, enhancing previous literature challenging the assertion that  
244 a relationship exists between routine stability and performance (Jackson, 2003); however, in the  
245 intervention and withdrawal phases, no times under two seconds were recorded, as opposed to nine at  
246 baseline. Visual inspection also suggests athletes' pre-performance routine time was slightly longer,  
247 which may suggest that a minimum routine time (e.g.,  $< 2$  seconds, to engage in relaxation cues such as

248 breathing/promote attentional control) is required for successful performance (see fig. 5 which offers  
249 athlete 1's data set as an example of the limited influence on routine time).

250 <Insert Figure 5 About Here >

251 Data-based evaluation was supported by athlete reflections (Barker et al., 2011). Each athlete  
252 attended an individual support session (25-45 minutes in duration) on completion of the intervention.  
253 During sessions, a feedback form, designed using previous literature to encourage reflection and act as  
254 a prompt for conversation, was completed (e.g., Anderson et al., 2004). In sessions, we (first author and  
255 athlete) discussed tangible performance metrics, with athletes being provided with a copy of their  
256 personal data set. All four athletes described perceiving the intervention as beneficial and discussed  
257 continuing to use diaphragmatic breathing. Variation in the degree to which athletes would engage  
258 emerged, for example, Luke (pseudonym) shared that he would engage in diaphragmatic breathing  
259 before every point 'I like the consistency of it, every point, it's like okay, I'm ready to go now', whilst  
260 Freya shared they would mainly use diaphragmatic breathing prior to important points (e.g., break  
261 point) 'It forces me to stop, think, relax, make a good decision, but I don't need that every point!' For  
262 one athlete, this process was of particular interest. Seb's data set showed a marginal improvement in  
263 serve percentage and temporal consistency post-intervention; however, his earlier reflections suggested  
264 he had found it extremely useful, appearing somewhat disheartened when presented with analysis 'Is  
265 that it... .. I thought it was better than that...' This raises an important ethical consideration—for  
266 whose benefit is the sharing of data? If an athlete is positive about an intervention, can we leave it with  
267 them? Is blissful ignorance permissible? (Watson et al., 2017). To conclude, the session discussions on  
268 the re-integration of diaphragmatic breathing (if this had not already occurred) were held. Athletes were  
269 informed that if they wanted to discuss the process further at any point, they were welcome to arrange  
270 another session. Three athletes accepted this offer with interactions varying significantly. For example,  
271 Freya attended one additional session (approx. 30 minutes) in which we explored her desire to use  
272 diaphragmatic breathing only on 'key points' and the benefits and weakness of such an approach.  
273 Conversely, Alex subsequently began engaging in 1-1 work, describing the influence the intervention  
274 had on his approach to receiving sport psychology support, perceived performance under pressure and  
275 subsequent desire to continue to develop.

**276 Reflections and Applied Considerations**

277 Reflection is a staple of applied practice, facilitating psychologist development and effective  
278 practice (Cropley et al., 2010). The present reflections seek to explore the first authors' practical and  
279 personal reflections from the intervention, considering relevance to applied practice. Gibbs' (1988)  
280 reflective cycle acted as a basis for reflections, however, reflections are offered as confessional tales.

**281 Single-Case Designs**

282 Honesty and transparency are pre-requisites for effective reflective practice (Devonport &  
283 Lane, 2014). Embracing such transparency, single-case designs are hard. Hard, in that the approach is  
284 time-consuming, far more so than other applied work I have undertaken. Gathering appropriate data,  
285 ensuring clarity in definitions, construct and design while endeavoring to ensure methodological rigor  
286 were not quick processes (Kazdin, 2011). While components of practice had always been considered, I  
287 had rarely done so in such depth. The 'scientificness' of a single-case design felt distant from the  
288 immediacy and instinctiveness of a brief pitch or pool-side intervention, and I consider myself a  
289 scientific, evidence-informed individual. A single-case design was also challenging, arguably ethically  
290 questionable because of the required withdrawal phase (Barker et al., 2011).

291 As previously alluded to, including a withdrawal phase did not come without resistance—first  
292 from the athletes, and secondly from myself. In resolving this challenge, two things stood out: the  
293 importance of incorporating athletes into decision-making and of the therapeutic relationship. Needs  
294 supportive behavior, in particular the provision of autonomy improves athlete engagement (Reynders  
295 et al., 2019). Arranging an athlete meeting before the withdrawal phase was arguably one of the best  
296 decisions I made. By collaboratively discussing concerns, athletes could feel heard and assert control,  
297 particularly important for adolescents (Carr, 2015). Relatively early in the session, I was upfront with  
298 athletes that while there was value to a withdrawal phase, ultimately if they did not want to, we would  
299 not do so. At that point, I took a backseat in conversations. My role was not to convince or coerce, but  
300 to provide a space for consideration and choice. The willingness of the group to find working solutions  
301 impressed me. The coach had chosen not to be present in this meeting. Although he had raised concerns  
302 around potential negative implications on sports performance, he expressed a confidence in the  
303 judgement of the athletes and I (lead author). This highlights the importance of explaining to coaches

304 an intervention process (where stipulations of confidentiality allow) and represents his desire for an  
305 athlete-centered environment.

306         Discussions felt reflective of athlete growth over the previous year (e.g., increased problem-  
307 solving capabilities, confidence in decision-making skills) and felt a step-closer to a psychologists' role  
308 of supporting the development of self-sufficient athletes (McArdle & Moore, 2012). The process also  
309 felt indicative of the quality of the therapeutic relationship. You do not have to look far to see literature  
310 stressing the importance of the therapeutic relationship in applied practice (e.g., Sharp et al., 2015). I  
311 perceived high trust from athletes during interactions and that, if I was presenting something as  
312 beneficial, it was at least worth considering. Establishing the relational building blocks of practice  
313 before applying interventions is key to my practice; particularly when working in sport where power-  
314 dynamics frequently exist (Rogers, 1959). In racing to provide athletes with things 'to do', we may  
315 unsuspectedly false start. In this regard, I sought to develop a therapeutic relationship with the athletes  
316 through the provision of Rogers' core conditions, in particular empathy, genuineness, and unconditional  
317 positive regard, practically this often meant 'talking less and listening more' something adolescents are  
318 not always accustomed to! Perhaps, though, my openness to sitting back reflected my discomfort.

319         From a personal perspective, implementing a withdrawal phase sat uncomfortably. On  
320 reflection, I observed a tension between a value/assumption I endeavor to hold dear and the action  
321 required. Removing something that appeared or was perceived as successful grained against me. Falling  
322 back to my humanistic roots, perhaps this tension was a source of distress (Rogers, 1959). How could I  
323 say I wanted the best for an athlete when asking to remove something helpful? With time and space, I  
324 realized that the withdrawal phase *was* helping. Helping to demonstrate efficacy, helping to support or  
325 challenge athletes' assertions and beliefs, helping to understand the next steps in the consultancy  
326 process. Not that withdrawal phases do not require significant consideration for applied practitioners.  
327 Would I recommend a withdrawal phase in the lead up to a major championship? Certainly not! In the  
328 same way practitioners should consider timing in integrating psychological skills, ensuring appropriate  
329 space for withdrawal should be considered too (Dosil et al., 2014); however, with these difficulties I  
330 perceived substantial reward—for the athletes, for the field, and for myself.

331           Scepticism and stigma around sport psychology support is well documented (e.g., Steinfeldt &  
332 Steinfeldt, 2012). With the increased professionalization of the field, it is arguably ever more important  
333 to understand, demonstrate, and communicate outcomes of practice. I perceived a single-case design to  
334 facilitate this (particularly understanding), providing a tangible evaluation of the intervention with a  
335 causal inference as to the mechanism of change. For the athletes, this provided confidence in what they  
336 were doing it, why they were doing it, and how it was helpful, like processes advocated in coaching  
337 pedagogy (Light & Harvey, 2017). For me, it enhanced my evaluation of the impact of the intervention,  
338 providing confidence in my practice. The reality of sport means we (and the field) can never conclude  
339 that sport psychology only made the difference; however, single-case designs bring us closer.

340           While always beneficial, a single-case design provided a further level of criticality to the  
341 process — was the change *because of* the intervention. In the week or two following the realization the  
342 outcome was positive, both statistically and anecdotally, I felt a rush of emotions. Excited for the  
343 athletes, proud of myself, optimistic about the opportunities, inquisitive around the development.  
344 Relieved that the time I had spent had benefited. This final musing stuck with me. A tendency I have  
345 noted in conversations with other practitioners, in published literature or at conferences, is to shout  
346 about the success. The results were positive, and I am more than happy to shout about them. I somewhat  
347 hesitantly share that I now look forward to a single-case design that is not effective. A learning  
348 opportunity to challenge my awareness and understanding of sport psychology constructs and my  
349 practice, an opportunity that should be shouted about too. In more proactively using single-case designs,  
350 the field of sport psychology can challenge skepticism by showing not telling, which I perceive can  
351 only have benefits. While applied practitioners should be cautious of ‘selling success’ as an applied  
352 intervention may not work for every client, and other factors (e.g., injury, ability) may get in the way,  
353 single case-designs may bring us close to having such an ability.

#### 354 ***Keeping it Simple***

355           As a youth athlete, I was once told ‘tennis is a simple game played by complex people’. This  
356 narrative is one that I feel transfers cleanly into the world of sport and exercise psychology - people are  
357 complex, our interventions need not be. In prior discussions with my supervisor, we discussed several  
358 components that could act as intervention content. Three words stuck with me from that discussion,



359 specified or not—keep it simple. As an eager practitioner, it is tempting, if not compelling, to chuck all  
360 the tools from our proverbial toolbox at an intervention (Tod et al., 2009). In not doing so, it afforded  
361 the athletes and I greater clarity and understanding of the processes that underpin (or cannot underpin)  
362 client change. Further, in focusing so concisely on one simple component, I felt able to critically analyze  
363 details of my practice more astutely (e.g., my delivery, the therapeutic relationship). Encouragingly,  
364 simple can be effective too.

365         A common question I ask myself during practice is ‘what is best for the client’? I began  
366 realizing an extension to this—how little an imprint is our work able to have, while still effecting  
367 meaningful change? There is no requirement for practice to be a showcase of knowledge, understanding,  
368 or capabilities. Athletes commonly seek change with as little effort as possible (Henriksen et al., 2019).  
369 By keeping interventions simple, we may satisfy this desire. This may be important for youth athletes,  
370 where limiting the cognitive-emotional cost of engaging in sport psychology support could leave space  
371 for other developmental requirements (e.g., transitions, motor-skill development; McCarthy, 2017).

### 372 *My Role & Delivery*

373         When reflecting on and evaluating an intervention, I often step on to a ‘professional  
374 responsibility’ merry-go-round that I struggle to get off. The evidence-base vs. contextually relevant  
375 debate is one I have previously articulated my concerns about (masked for review). As I continue to  
376 develop as a practitioner, my role in the phases of applied practice (e.g., design, implementation) and  
377 the respective prominence of evidence and adaptation becomes clearer. For example, during the design  
378 phase, I was heavily guided by a need for evidence-informed practice, ensuring presented components  
379 sat logically and coherently with the client’s assessment and needs (BPS, 2018). My role was that of an  
380 expert, sifting and deciphering information to find the correct information. Conversely, during  
381 intervention delivery, my role entailed sharing knowledge and understanding, providing support to  
382 allow athletes to make sense of and apply information in a way that felt meaningful to them. I needed  
383 to relinquish control and ownership, as it was not my intervention, but theirs. While literature had  
384 provided the five W’s during development (who, what, when, where, why) the athletes got to decide  
385 the exact *how* of implementation, with some recommendations from me, of course. I do not intend this  
386 reflection to de-value the skills required of practitioners for successful implementation—personability,

387 trusting relationships, enthusiasm, and awareness (Chandler et al., 2014). It is more to highlight that in  
388 trusting my ability (to decipher literature, communicate and deliver information effectively and  
389 engagingly) and trusting the athletes' capability to change, grow and apply information in a way that  
390 worked for them, I felt able to step off my self-created merry-go-round with a little more ease.

### 391 ***Concluding Reflections***

392 Conducting the present single-case design has been one of the 'cleanest' pieces of applied work  
393 I have delivered. It has also been one of the most challenging and time demanding. I perceive the  
394 approach may raise uncomfortable emotions in applied practitioners, as it forces us to confront the  
395 reality of the effectiveness of us, and our practice. Overall, the intervention appeared effective, with  
396 positive outcomes for the athletes involved. I hope that the presentation and design have resulted in  
397 information that is cleanly written and easy to transfer or apply in other contexts—I know I would like  
398 to read more similar cases. Further, I hope that my reflections and recommendations for applied  
399 practitioners are warmly received. In striving for evidence-informed, empirically grounded, applied  
400 literature, I perceive everyone benefits: the athletes (or client) and us as practitioners.

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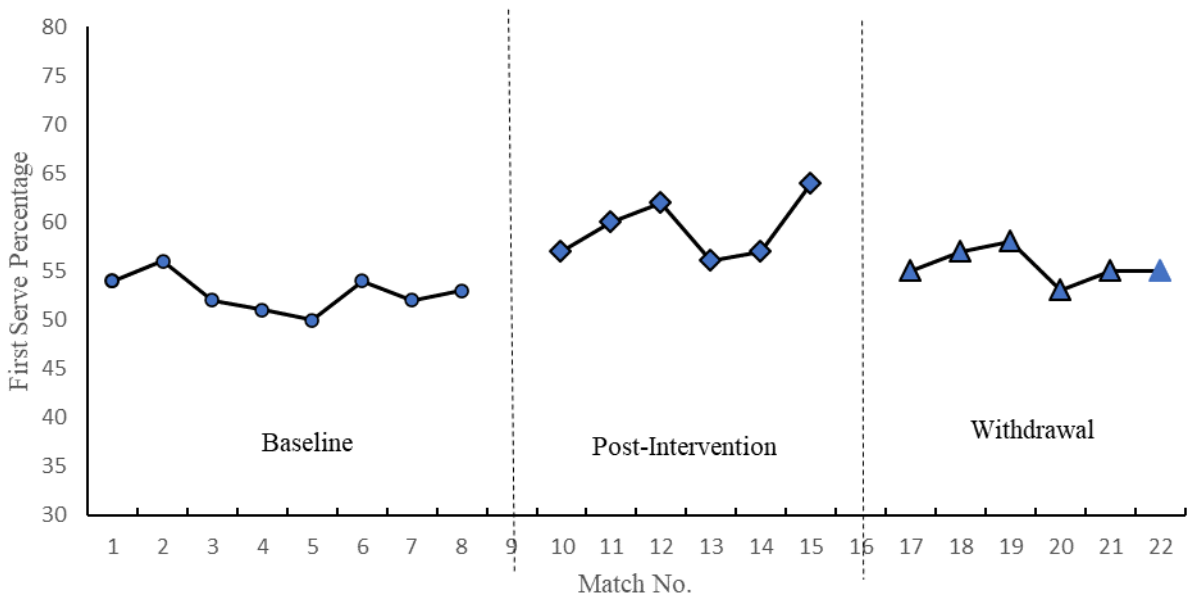
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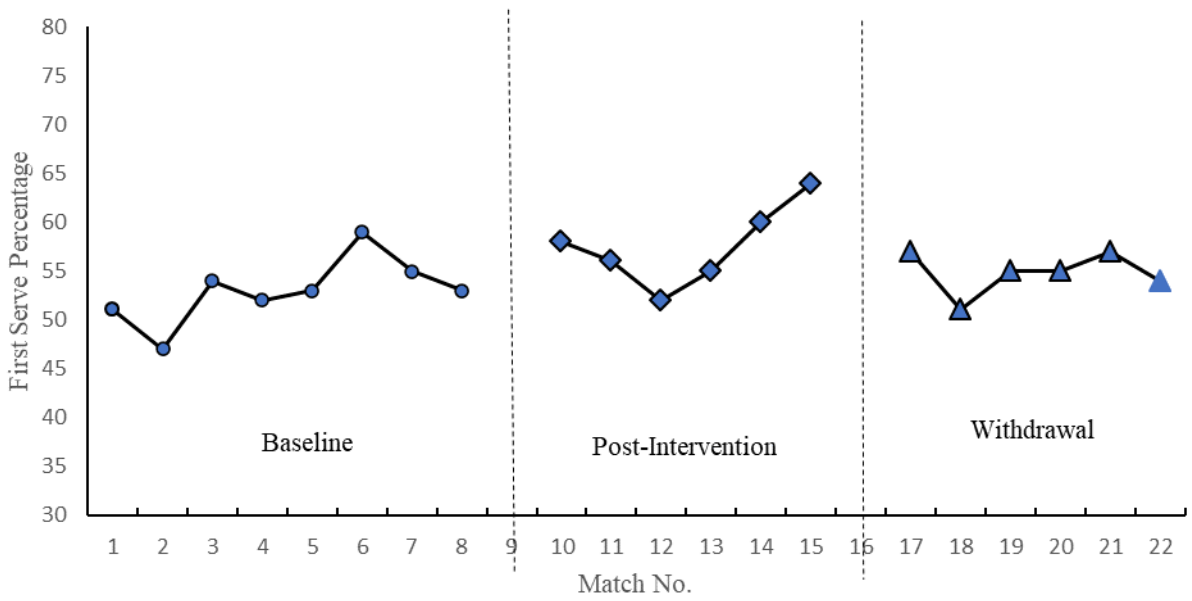
581 **Figure 1.**

*Athlete 1: first serve percentage at baseline, post-intervention and withdrawal.*



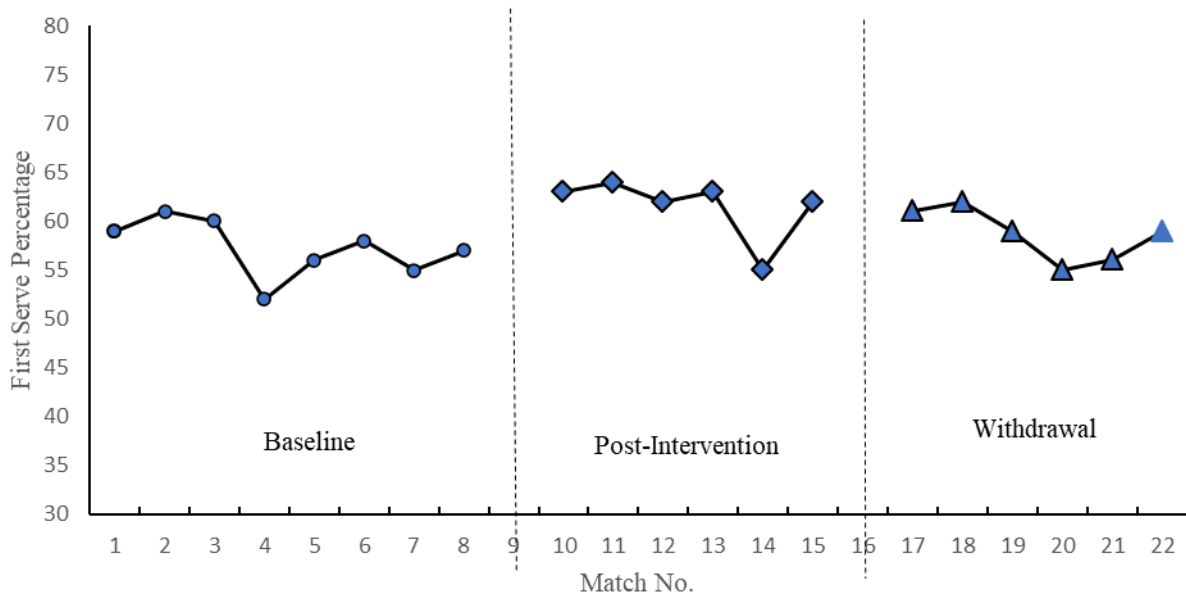
**Figure 2.**

*Athlete 2: first serve percentage at baseline, post-intervention and withdrawal.*



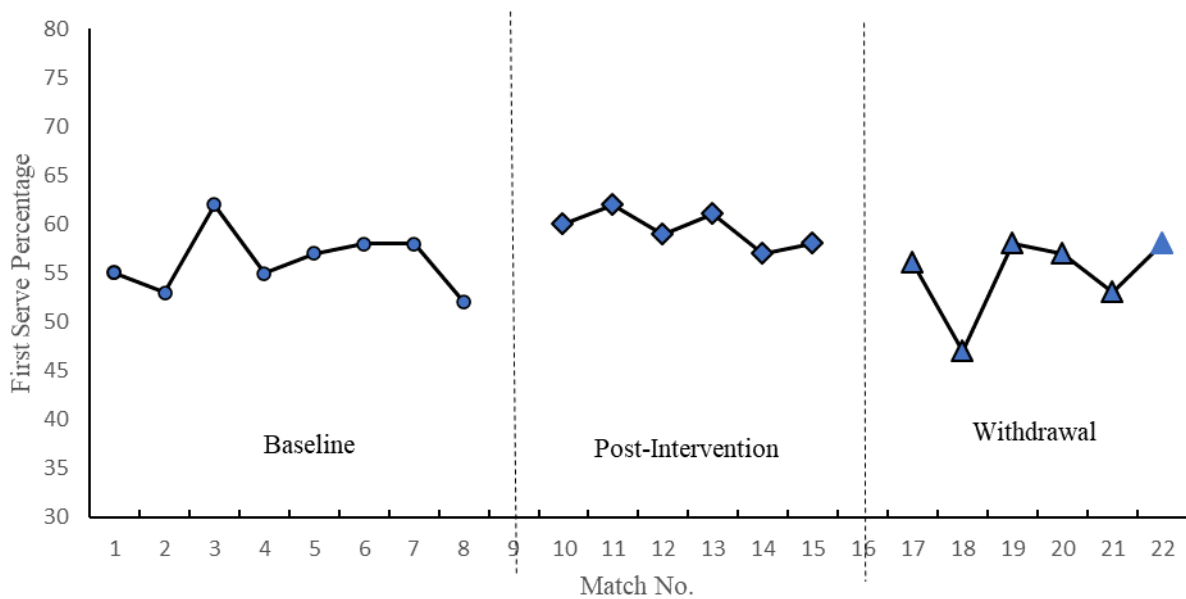
**Figure 3.**

*Athlete 3: first serve percentage at baseline, post-intervention and withdrawal.*



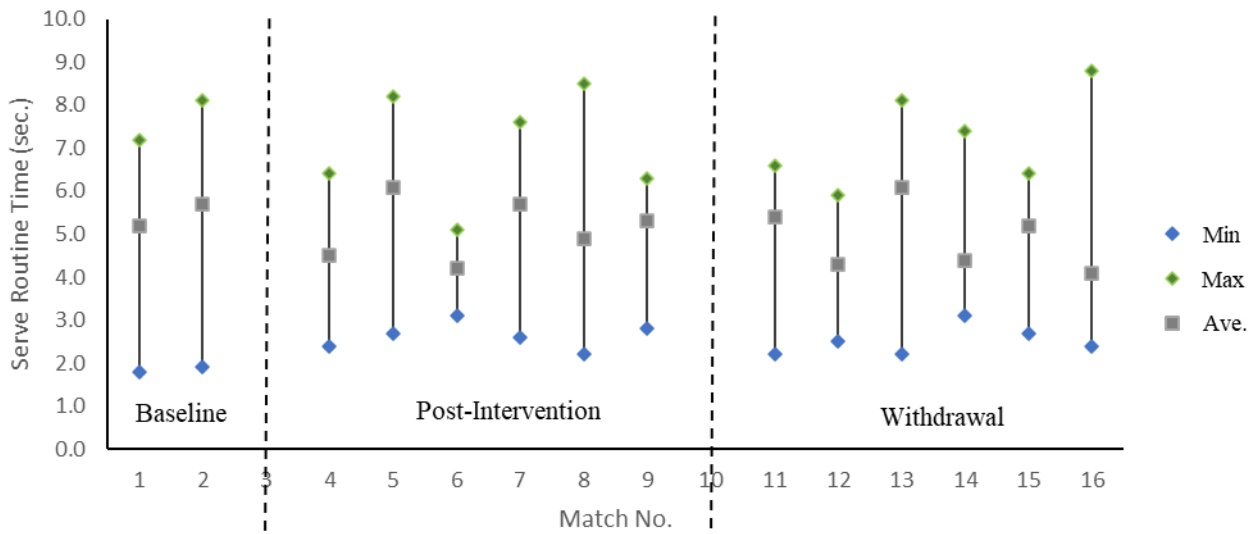
**Figure 4.**

*Athlete 4: first serve percentage at baseline, post-intervention and withdrawal.*



**Figure 5.**

*Athlete 1: Serve routine time at baseline, post-intervention and withdrawal.*



**Table 1.**  
Session Plan for On Court Implementation

<b>Time</b>	<b>Task &amp; Detail</b>
	<b>Warm-Up</b>
10min	Extended tennis-specific match warm-up to prepare for play. Athletes to have completed physical warm-up prior to session start time.
	<b>Brief</b>
5min	Information about purpose and structure of the session provided (e.g., sequencing). Initial discussions with athletes on ideas about how integration would work (e.g., where in their current behaviors). Athletes provided autonomy over 'how' they practiced/integrated as very individualized process. Athletes encouraged to work independently with the sport psychologist picking up with athletes individually.
	<b>Serve Practice (<i>In Isolation</i>)</b>
25min	Section Aim: Facilitate the use of deep breathing prior to the serve. Athletes all provided with a basket of balls (and end of a tennis court) from which to practice serving. The basket was situated far enough that players were required to take 3-4 steps between serves (increasing likelihood of engagement/not rushing). Sport psychologist to move around athletes, picking up discussions around implementation, this included; provision of support and encouragement, provision of praise, discussions around timing, confidence in the technique, implementation skills and repeatability. Athletes to be encouraged to use the same format (e.g., one diaphragmatic breath) for between 10-20 serves before trying an alternative format (unless doing something is 'obviously' not appropriate for them. Keep practice really closed-skill to focus on skill development/integration.
	<b>De-Brief / Brief</b>
5min	Provide an opportunity for a drink break, de-brief on how players found integrating with serve (yes/no/maybe). Response dictates next actions. If consensus no – spend more time on skill development. If consensus yes, provide brief on progression into the next phase (close points). Include open discussions to encourage reflection and sharing (group/individual basis).
	<b>Closed Points</b>
30min	Section Aim: Use integrated diaphragmatic breathing prior to the serve, then play out the point. Two players on each court, one player as server for 15mins then role reversal. Athletes serve and play out ball 1-4 (if the point progresses that long). One player serving the whole duration to allow concentrated focus (e.g., easier for athlete in earlier-stages of skill development, easier for me as practitioner to work with two athletes at a time as opposed to four, limits total required attentional focus based on age/stage). Expansion to include shots 1-4 intended to encourage the use of deep breathing and then execute other skills (e.g., intervention focus is on serve percentage, but while important, meaningful significance is obtained based on what happens after (e.g., point outcome).
	<b>De-Brief / Brief</b>
5min	<i>As above. Use of Socratic questions, provision of a reflective space to develop shared understanding, check-in's with athlete development, confidence and execution.</i>
	<b>Open Points</b>
30min	Section Aim: Integrate diaphragmatic breathing prior to serve during normal point play. Athletes to begin a normal set of tennis (e.g., set to 6, tiebreak at 6-6, change ends at odd games, play all points out to natural conclusion). Server provided support/discussion around integration using a combination of verbal and observational feedback. Athletes encouraged to provide reflective feedback where possible.
	<b>De-Brief</b>
10min	Final debrief on the session. Check in on how athletes found the session, found integrating the breathing into pre-serve routine. Players provided with a take-home worksheet that encouraged practice, reflective thinking and an evaluation on how they had found content.
	<i>*Note: flexible on timings - if athletes moving through content/faster or slower adjust session speed as necessary.</i>
	<i>*Note: for more information on resources please contact the first author.</i>