

Practice And Tournament Volumes Of Young Golfers In Regional And National Squads

Ben L. Langdown^{1,2}, Stephen Burnett², Nicholas Jones^{2,3}, Daniel Coughlan²

¹*School of Education, Childhood, Youth & Sport, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK*

²*England Golf, The National Golf Centre, Woodhall Spa, LN10 6PU, UK*

³*DNA Sports Performance Ltd, Pembroke House, Ellice Way, Wrexham Technology Park, Wrexham, Wales, LL13 7YT, UK*

- Biomechanics and Physiology

Purpose:

Practice plays a part in determining skill development, expertise (Ericsson & Pool, 2016; Baker et al., 2003), levels of creativity (Memmert et al., 2010) psychological preparation, increases in novice golfers' gray matter (Bezzola et al., 2011), and decision making (Baker et al., 2003). Currently there is little empirical research demonstrating the amount of practice golfers conduct on a session to session, weekly, monthly, seasonal or annual basis and the impact this can have on their handicap. Previous research has suggested that deliberate practice can explain some of the variance in performance levels (Macnamara et al., 2016). However, with a paucity of golf specific research in this area, it is important to establish the volumes being undertaken and the impact of those volumes on the golfer's ability.

This initial study aimed to establish the practice and tournament volumes of young golfers involved in a national governing body's development programme and investigate how practice volumes influence handicap.

Methods:

Amateur golfers selected for regional and national squads were recruited using convenience sampling (n=111; Males n=68, Females n=42; Age=16.21 ± 1.69 years; Initial hcp=3.62 ± 3.45 strokes; Final hcp=1.77 ± 2.91 strokes). All golfers provided informed consent and over an 11 month period (to date) submitted daily practice and tournament volume data. Golfers reported the total shots played for both

short and long game during practice sessions, number of minutes spent on the putting green, and the number of practice and tournament holes completed.

A repeated measures ANOVA with Bonferroni post-hoc analysis was used to assess fluctuations in volumes over the 11 months and an independent t-test assessed for volume differences between genders. A backward stepwise multiple regression analysis was used to assess the level to which practice and tournament variables can be used to predict changes in handicap.

Results:

Descriptive statistics indicate large discrepancies across golfers involved in the development programme with regards practice and tournament volumes (Table 1.0) with no significant differences found between male and female total volumes ($p=.620$).

Table 1.0 Male and female monthly averages for all practice and tournament variables

Practice / Tournament Variable	Minimum		Mean \pm SD		Maximum	
	Male	Female	Male	Female	Male	Female
Short Game (Shots)	29	128	792.43 \pm 624.63	727.21 \pm 632.34	3231	2791
Long Game (Shots)	0	146	1077.66 \pm 773.57	997.36 \pm 750.30	4108	3300
Putting Green (Mins)	15	0	409.84 \pm 304.83	433.67 \pm 292.02	1440	1309
Practice Holes	0	19	85.76 \pm 51.62	73.71 \pm 39.94	247	191
Tournament Holes	0	0	77.96 \pm 54.42	71.52 \pm 38.84	275	159
Total Volume	369	423	2443.46 \pm 1491.97	2295.79 \pm 1545.49	7457	7274

Repeated measure ANOVA analysis showed significant fluctuation in practice and tournament volumes across the 11 months ($F(5.033, 115.754)=4.765, p=.001, \eta p^2=.172$) with Bonferroni post-hoc tests showing that April (3100.75 \pm 1567.02) had significantly higher volumes than January (2213.92 \pm 1864.95, $p=.004$) and May (2289.58 \pm 1361.95, $p<.001$), and that July (3040.25 \pm 1379.88) also had significantly higher volumes than January ($p=.006$) and May ($p=.013$) (Figure 1.0).

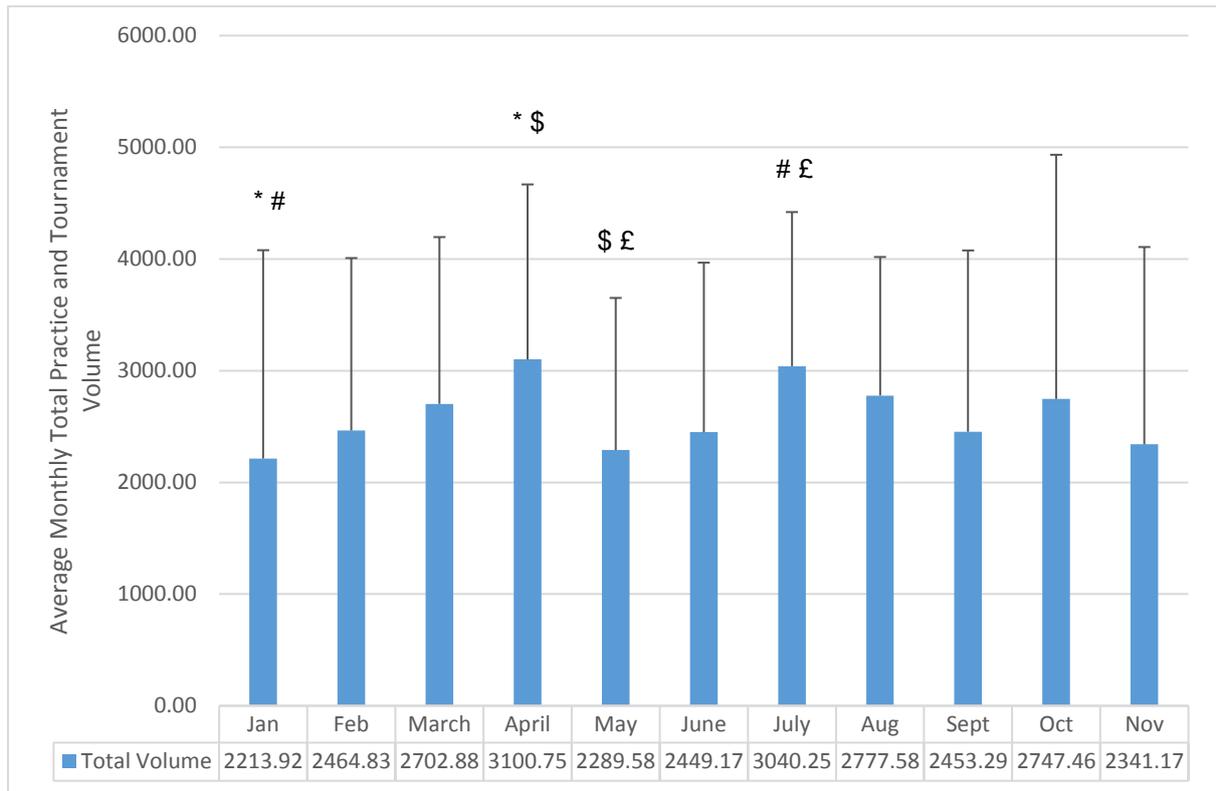


Figure 1.0 Total practice and tournament volumes across 11 months of initial data collection.

Note. **£ p < .05, \$ p < .001.

The backward stepwise regression analysis revealed that the volume of long game practice young golfers undertake is a significant predictor of changes in handicap ($R^2=.041$, $p=.034$; Table 2.0).

Table 2.0 Multiple backward stepwise regression analysis of each practice and tournament volume's influence on handicap change

Step	Variable	Handicap Change			
		B	SE B	β	95% CI
Step 1	Constant	1.860	.579		[.713, 3.007]
	Tournament Holes	.065	.042	.153	[-.018, .148]
	Practice Holes	-.020	.059	-.037	[-.137, .097]
	Putting Mins	.031	.025	.161	[-.019, .082]
	Long Game	-.021	.017	-.176	[-.055, .012]
	Short Game	-.020	.023	-.148	[-.065, .026]
Step 2	Constant	1.765	.504		[.765, 2.765]
	Tournament Holes	.064	.041	.151	[-.018, .146]
	Putting Mins	.030	.025	.157	[-.019, .080]
	Long Game	-.022	.017	-.179	[-.055, .011]
	Short Game	-.021	.022	-.160	[-.065, .023]
Step 3	Constant	1.846	.497		[.860, 2.831]
	Tournament Holes	.055	.040	.131	[-.025, .135]
	Putting Mins	.017	.021	.087	[-.024, .058]
	Long Game	-.032	.013	-.258	[-.057, -.006]
Step 4	Constant	1.983	.467		[1.057, 2.908]
	Tournament Holes	.060	.040	.143	[-.018, .139]
	Long Game	-.027	.012	-.219	[-.050, -.004]
Step 5	Constant	2.413	.373		[1.673, 3.153]
	Long Game	-.025	.012	-.203*	[-.048, -.002]

Note. $R^2 = .076$ for Step 1, $\Delta R^2 = -.001$ for step 2, $\Delta R^2 = -.008$ for step 3, $\Delta R^2 = -.006$ for step 4, $\Delta R^2 = -.020$ for step 5. * $p < .05$.

Discussion:

Initial data collection and analysis has revealed long game practice volumes to be a small but significant predictor of handicap change ($R^2 = .041$). However, this result should be applied with great caution as this is a small predictor amongst many other variables that can influence golf performance and reduction in handicap.

There is currently no evidence that provides individualised practice and tournament volume thresholds with regards performance or injury for any golfers, most notably for those striving for progression through regional and national squads. With large fluctuations in volumes seen across the golfers in this sample, it is clear that each golfer currently employs an individual approach to practice. Average monthly total volumes can be dictated by the time available to the golfer. With many of those on the programme facing academic examinations during May and June it is apparent that this could have impacted upon their practice and tournament volumes. The Easter break often provides the first opportunity of the year for tournament golf in the UK, with this falling in April during the data collection it is unsurprising that the total volumes here and in the summer month of July were significantly higher than at other times of the year.

Practical Application / Clinical Relevance:

The fluctuations in volume seen here highlights that some young golfers may need support in structuring effective practice and tournament scheduling to aid handicap improvements. PGA Professional golf coaches and other support staff should facilitate the monitoring and structuring of practice / tournament volumes whilst taking into account the impact of other external factors (e.g. academic pressures).

Further data collection and analysis is required over the next 5-10 years to establish the longer term impact of recorded practice and tournament volumes in young golfers. It is vital that future research informs coaches, junior development organisations, parents and golfers of the impact practice volumes can have on handicap and also the occurrence of overuse injuries and golfing performance.

References

Baker, J., Cote, J., & Abernethy, B. (2003). Sport-specific practice and the development of expert decision-making in team ball sports. *Journal of Applied Sport Psychology*, 15(1), 12-25.

Bezzola, L., Mérillat, S., Gaser, C., & Jäncke, L. (2011). Training-induced neural plasticity in golf novices. *Journal of Neuroscience*, 31(35), 12444-12448.

Ericsson, A., & Pool, R. (2016). *Peak: Secrets from the New Science of Expertise*. Houghton Mifflin Harcourt.

Macnamara, B.N., Moreau, D., & Hambrick, D.Z. (2016). The relationship between deliberate practice and performance in sports: A meta-analysis. *Perspectives on Psychological Science*, 11(3), 333-350.

Memmert, D., Baker, J., & Bertsch, C. (2010). Play and practice in the development of sport-specific creativity in team ball sports. *High Ability Studies*, 21(1), 3-18.