

# Effect of Basketball Dribbling Practice on Cursive Handwriting of Primary School Children

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**Abstract:** *The objective of the present investigation was to examine the effect of basketball dribbling practice on handwriting of primary school children. To achieve the purpose of the study 45 primary school children of schools of Coimbatore district were selected subjects. The age of the subjects ranges between 7-9 years. They were randomly assigned into three groups equally so that each group has 15 subjects. The first group was named as the cursive writing group (CWG). The second group was named as the Combined Cursive writing and basketball dribbling practice group (CBDG) and the third was control group (CG). After assigning the subjects into various groups the pretest was conducted on the selected psychomotor variables namely hand eye co-ordination and finger dexterity along with Cursive handwriting ability. After completion of the pretest the subjects were treated with basketball dribbling practice. The training period was scheduled for 12 weeks. Experimental group 1 (CWG) underwent cursive writing practice. Experimental group 2 (CBDG) underwent cursive writing practice along with basketball dribbling practice and the control group did not undergo any specific training. After 12 weeks of the training period post test was conducted on the dependent variables for all the groups. To analyze the treatment effect of pre and post test training 't' ratio was used. To compare the significance of mean differences among all the three groups analysis of covariance was used. Results: The cursive writing group (CWG) and combined cursive writing and basketball dribbling practice (PYTG) was significantly improved ( $P < 0.05$ ) the selected variables of hand eye co-ordination, finger dexterity and cursive writing ability. The experimental group 1 (CWG) cursive writing group was better than the control group. The experimental group 1 did not show significant difference than the experimental group 2. The experimental group 2 combined training groups (CBDG) showed better significant results than the control group. The perceptual and yoga training group was better than the perceptual training. The control group did not show any significant improvement on the selected variables. Conclusion: Based on the results it was concluded that the implication of basketball dribbling might have been the source of its dominance on the improvement of hand eye co-ordination, finger dexterity and also has produce significant changes on cursive writing ability of primary school children.*

**Keywords:** basketball dribbling, cursive writing, finger dexterity, hand eye coordination, primary school children

## 1. Introduction

It was a summer vacation where this problem started. My husband wanted my child to go to a handwriting center to improve his cursive writing ability and I on the other side being sports professional wanted my child to involve him in sports training in which he showed great interest. The conversation went on and on. Every Child goes to school all though the year. In vacation most of the parents wanted them to master the skills and prepare themselves to shine in school. Many educated parents do the same thing with children especially who write board exams. When I started surfing the web in this regard I went through an article written by Tony (2015). It was mentioned that the same thing happens even in music learning. This discussion triggered my mind to prove sports as a practice which facilitates learning. Even while working in school, most parents of my school children too reacted the same way. Sport and play is a natural activity of children. It is the right of every child. As an interdisciplinary approach I wanted to find out the effect of basketball dribbling practice on cursive writing.

### Significance of this study

- Facilitates positive transfer of learning
- Change in attitude of stigmatized Parents and teachers who feel that sports participation may eat up the time spent academic learning so that child won't excel in studies.
- There are many social, psychological and academic benefits that children enjoyed just by taking part in a sport.

- The abundant energy of children is meaningfully channelized.

### Parenting challenges of this era

The competitive nature and intense pressure that often comes with sports may make parents think twice about allowing their children to take part that too children of this age. As parents we so identify with our kids achievement quickly becomes our own. As spectators, parents look for authentication even at the earliest stages that winning promise exist for their child, a better team, rewards like scholarships, promotions or placement. Naturally life goes behind expectations, which affects the harmony of childhood. Happiness is like a butterfly when we go behind it keeps flying, but when we are calm it leaves its footprints on our cheek. I do agree with the present day challenges of parenting, the competitive world and the rat's race which we run, but then do we allow them to smell the happiness of nature.

Single child syndrome is one of the biggest reasons for over pampered children who face emotional imbalance especially during the win over lose situation. Franklin covey (2013) his book on 7 habits of highly effective people clearly explains it. Parents of this era are in a dilemma on how to strike a balance between being a protective parent versus an over-protective parent. There also exists a question on whether the parents of this era are helicopter parents (a parent who takes an overprotective or excessive interest in the life of their child or children). India ranks second among the countries which speaks English. 'English on tongue' tip has become a custom in today's lifestyle. In fact many families

have forgotten their mother tongue because English language has become a status symbol. The expectation of each parent is that they want their child to write and speak English. They feel up during situations where their child showcases such talents. Almost all parents wanted children to be all-rounders.

### **Importance of good handwriting**

National Handwriting Association (2016) United Kingdom says that handwriting is an essential skill for both children and adults. For younger children Handwriting stimulates the brain more than using keyboard because it involves more complex motor and cognitive skills. Handwriting also aids to reading fluency because it activates visual perception of letters through photo graphic memory. Handwriting is a forecaster of success in other subjects, because good handwriting has a positive impact on grades. Cursive writing helps students, both young and old, with dyslexia (learning difficulties). Children can have a very hard time with writing in print form because many of the letters look similar, particularly b and d. Also it can feel very uncomfortable and lacking continuity writing in print form. Cursive writing offers each letter a very different look and allow the child to write in a graceful, relaxing way. This can decrease their dyslexic tendencies and make them more confident in their capabilities.

Good handwriting is crucial long after graduation. In our contemporary world, in all walks of life, people are judged by their handwriting. Squiggling down a shopping list, writing a birthday card, noting down a phone message, filling up a form at the bank and in many other activities too. Handwriting is part of our daily lives. It is on show to others and may be used to make judgments about us. A spelling mistake or a numerical error can change the entire meaning of communication.

Good writing skills can help in life. For a person who is looking for a job, good writing skills make it more advantageous to the employer. One of the first things an employer looks at is the cover letter or resume. Children, students, teachers, lecturers and parents feel happy, confident and inspired by good handwriting skills. Good handwriting is the platform for achievement in the workplace and self-assurance in life. It is the key to progress and success.

### **Handwriting difficulties**

Because handwriting is such a multifaceted ability, there are many children who have complications mastering it. This may cause disappointment and agony and affect a child's craving to write. It may also cause anxiety for the parents and teachers who watch the child thrash about to put his or her ideas on paper. Not all difficulties are the same or caused by the same factors.

The main areas of concern were Legibility, Neatness, Child's Comfort, Pressure applied while writing, Speed of writing to know whether he writes very slowly, producing too little writing, or too fast, becoming inaccurate. As Speed writing plays key role in time management during exams. Motivation and enjoyment also plays a key role whether the child is reluctant to write or gives up too easily.

### **Selection of Subject and Variables**

The present study was designed to examine the effect of basketball dribbling practice on hand eye co-ordination, finger dexterity and cursive writing ability of primary school children. 45 primary school children of Schools of Coimbatore district acted as subjects. The age of the subjects ranges between 7-9 years. The selected variables were hand eye co-ordination, finger dexterity and cursive writing ability. Tests were conducted to all the selected subjects before and after the training. The experimental group underwent a twelve week perceptual training program.

### **Experimental Design**

In this study forty-five primary school children of age range 7-9 years were randomly divided into three groups namely, experimental group 1 cursive writing group (n=15 CWG) experimental group 2 combined basketball dribbling with cursive writing practice group (n=15, CBDG) and control group (n=15, CG). Each group consists of fifteen subjects. The selected subjects were initially tested on the selected psychomotor variables namely hand eye co-ordination, finger dexterity and cursive writing performance. After the completion of the pretest, the subjects belonging to experimental group 1 and 2 were treated with their respective training program for twelve weeks. The experimental group 1 underwent cursive writing practice and experimental group 2 underwent both basketball dribbling and cursive writing practice and control group had not actively participated in any specific training. After 12 weeks of training period post test was conducted for all the three groups.

### **Test Procedure**

The following tests were chosen for testing variables. Hand eye co ordination was measured by mirror drawing trace board, finger dexterity was measured by O' corners 'tweezers dexterity board and cursive writing with a four ruled paragraph writing test. The chosen tests were highly standardized, appropriate and ideal to assess the selected variables.

**Hand eye co-ordination:** *Purpose:* The purpose of the test was to measure the coordinative ability between the hand and the eye. *Equipment:* Mirror drawings trace board. *Procedure:* The tracing mirror was placed safely on the table. A calling bell was also attached to the tracing mirror. Concentration was given as the plus point. To find out the hand eye co-ordination the subjects were asked to move the tracing plate through the way which was given in the tracing plate by seeing the mirror. If the needle touches any side of the path, the error was counted. Three trials were given to the subjects, scoring of average of all trails was taken as the score for calculations. *Scoring:* Hand-eye co-ordination error: the score was recorded as the number of total errors. Hand-eye co-ordination time taken: the score was the time taken to complete one trial and recorded in seconds.

**Finger dexterity:** *Purpose:* To measure the finger dexterity. *Equipment:* O' corners 'tweezers dexterity board, pins, paper, stopwatch and pen. *Procedure:* The subject inserted pins in its holes which were to be inserted in two conditions 1, by right hand and 2, by left hand. The pins were kept to the side of the subject so that the subject did not face any

trouble; in picking up the pins. The correct condition of insertion of pins was to start insertion from right side of the subject if work started by the right hand and then from left to right repeating in the same way till the works is finished. The time was noted by the stopwatch. Errors were committed when the pins were not inserted correctly or were slanting or otherwise or are fallen. *Scoring*: Time taken for fixing 100 pins by the dominant hand was taken as score.

## 2. Training Programme

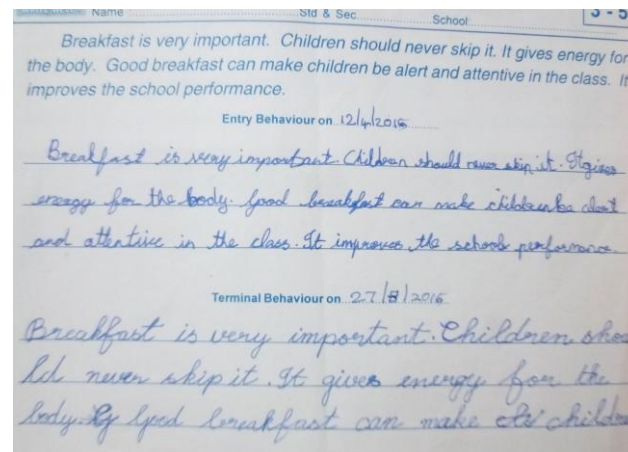
**Cursive writing practice:** Green Gardens cursive writing module was given for twelve weeks as for one hour a session for 5 days a week to experimental group 1(CWG). Load was managed by increasing the quantity of content every two weeks as mentioned below.

Sno	Writing skill	Pages	Time	Week
1	Small letters	2	30 min	1,2
2	Capitals letters	2	30 min	3,4
3	Words	2	30 min	5,6
4	Proverbs	2	30 min	7,8
5	Sentences	2	30 min	9,10
6	Paragraph	2	30 min	11,12
	<b>Total time</b>			12 weeks

**Cursive writing and basketball dribbling practice:** The experimental group 2 (CBDG) was given 30 minutes of basketball dribbling practice and 30 minutes of cursive writing for twelve weeks as one session a day for 5 days a week.

Sno	Exercise	Repetition	Set	Rep rest	Set rest	Time
1	High dribble 1 ball	2*60 sec	2	10 sec	20 sec	5 min
2	Low dribble 1 ball	3*30 sec	2	30 sec	30 sec	5 min
3	Hockey dribble 1 ball	3*30 sec	2	30 sec	30 sec	5 min
4	High and low Dribble with 2 balls	3*30 sec	2	30 sec	30 sec	5 min
5	Hockey dribble(2 balls)	3*30 sec	2	30 sec	30 sec	5 min
6	Change over dribble,,	1*300 sec	1			5 min
	<b>Total time</b>					30 min

Sno	Writing skill	Pages	Time	Week
1	Small letters	2	30 min	1,2
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3	Words	2	30 min	5,6
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6	Paragraph	2	30 min	11,12
	<b>Total time</b>			12 weeks



## 3. Statistical Analysis

To analyse the comparative treatment effects of training 't' ratio was used. To compare the significance of the mean differences among the three groups analysis of co-variance was used. When the F-ratio was significant, Scheffe's post-hoc test was used to identify the significant differences between the training groups. To test the significance of the derived results, the alpha level was set at 0.05 level of confidence.

### Result of the Study

Analysis of covariance was applied to determine whether the training program produced any significant difference by improvements in hand eye coordination, finger dexterity and handwriting among cursive writing group and combined basketball dribbling practice with cursive writing practice group. The analysis is presented in the following tables.

**Table 1:** Significance of the mean difference of pre and posttest of cursive writing group and combined basketball dribbling practice with cursive writing practice group and control group on hand eye coordination, finger dexterity

Variables	Groups	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	't' ratio	% changes
Hand eye coordination	CWG	28.73 $\pm$ 6.52	18.13 $\pm$ 5.30	4.620	36%
	CBDG	27.60 $\pm$ 6.05	12.67 $\pm$ 3.39	8.843	54%
	CG	28.53 $\pm$ 5.79	26.60 $\pm$ 4.17	1.435	7%
Finger dexterity	CWG	18.40 $\pm$ 4.98	12.80 $\pm$ 3.80	3.981	30%
	CBDG	18.87 $\pm$ 4.93	10.27 $\pm$ 4.93	6.865	46%
	CG	18.07 $\pm$ 5.57	16.73 $\pm$ 4.68	0.724	7%

Table -1 show that the obtained t-ratio's between the pre and post test means of the control group, cursive writing group and combined basketball dribbling practice and cursive writing practice group on **hand eye co-ordination** of primary schoolchildren were 1.435, 8.843, and 4.620 respectively. The obtained t-values of cursive writing group and combined basketball dribbling practice and cursive writing practice group, were found to be higher than the required table value 2.145 df 1 and 14 at 0.05 level of significant. Hence the null hypothesis was rejected at 0.05 level of significance. Thus it may be concluded that hand eye co-ordination increased by 36%, 54%, and 7% for cursive writing group and combined basketball dribbling practice and cursive writing practice group and control group respectively.



Table -1 show that the obtained t-ratio's between the pre and post test means of the control group, cursive writing group and combined basketball dribbling practice and cursive writing practice group on **finger dexterity** of primary school children were 0.724, 6.865 and 3.981 respectively. The obtained t-values of cursive writing group and combined basketball dribbling practice and cursive writing practice group, were found to be higher than the required table value 2.145 df 1 and 14 at 0.05 level of significant. Hence the null hypothesis was rejected at 0.05 level of significance. Thus it may be concluded that finger dexterity had increased by 30%, 46%, and 7% for cursive writing group and combined basketball dribbling practice and cursive writing practice group and control training group respectively.

**Table 2:** Analysis of covariance on pre, post and adjusted posttest means on hand eye co-ordination & finger dexterity of cursive writing group (CWG) and combined basketball dribbling practice and cursive writing practice group (CBDG) and control group (CG)

Variables	Groups	Test			F – value		
		Pre-test	Post-test	Adjusted post-test	Pre-test	Post-test	Adjusted post-test
Hand eye coordination (Scores in numbers)	CWG	29	18	18	1.14	26.11	27.39*
	CBDG	28	13	13			
	CG	29	27	26			
Finger dexterity (Scores in minutes)	CWG	18.40	12.80	13.18	1.61	5.79*	6.55*
	CBDG	18.87	10.27	10.50			
	CG	18.07	16.73	17.21			

\* Significant at 0.05 level

Table -2 indicates that the pretest mean value of CWG, CBDG, and CG were 29, 28, 29 respectively on **hand eye co-ordination**. The obtained F ratio of 1.14 was found to be lower than the table value 3.23 for df 2 and 42, it is found to be insignificant at 0.05 levels. It is inferred that statistically there was no significant variation among CWG, CBDG and CG on hand eye co-ordination before commencement of the training. The posttest means values of CWG, CBDG and CG 18, 13, 26 respectively on hand eye co-ordination. The obtained F ratio of 27.39 was found to be higher than the table value 3.23 for df 2 and 42, it is found to be significant at 0.05 levels. It reveals that there was a significant difference among CWG, CBDG and CG. It is concluded that

hand eye co-ordination had a significant improvement after 12 weeks of training. The obtained adjusted posttest F ratio of 26.11 was also found to be statistically significant.

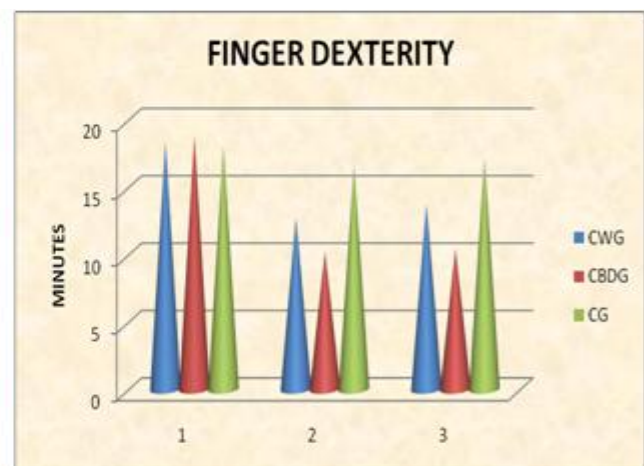
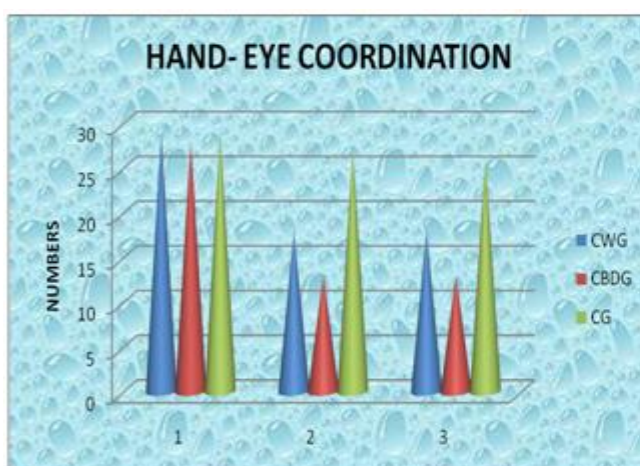
Table -2 indicates that the pretest mean value of CWG, CBDG and CG were 18.40, 18.87, 18.07 respectively on **finger dexterity**. The obtained F ratio of 1.61 was found to be lower than the table value 3.23 for df 2 and 42, it is found to be insignificant at 0.05 levels. It is inferred that statistically there was no significant variation among CWG, CBDG and CG on finger dexterity before commencement of the training. The posttest means values of CWG, CBDG and CG 12.80, 10.27, 16.73 respectively on finger dexterity. The obtained F ratio of 5.79 was found to be higher than the table value 3.23 for df 2 and 42, it is found to be significant at 0.05 levels. It reveals that there was a significant difference among CWG, CBDG and CG. It is concluded that finger dexterity had a significant improvement after 12 weeks of training. The obtained adjusted posttest F ratio of 6.55 was also found to be statistically significant.

**Table 3:** Scheffe's - Post-Hoc test Analysis

Variables	Group	ADJ. MEAN		(k-1)F 5%	
		CG	PTG		
Hand eye coordination	CG	26.63	24.653	66.047	8.318
	CWG	18.15		9.997	
	CBDG	12.75			
Finger dexterity	CG	17.21	7.019	19.46	8.318
	CWG	13.18		9.104	
	CBDG	10.5			

Table - 3, shows the Scheffe's F test analysis obtained by adjusted posttest means of hand eye co-ordination & finger dexterity. In case of hand eye co-ordination it was observed that the obtained Scheffe's F test for the combined group had significantly improved than cursive writing group. All the two experimental groups had significantly improvement in hand eye co-ordination, than the control group.

In case of finger dexterity was observed that the obtained Scheffe's F test for the combined group had significantly improved than cursive hand writing group. All the two experimental groups had significantly improvement in finger dexterity, than the control group.



**Figure 1:** Diagram showing pretest, posttest and adjusted posttest means of CWG, CBDG and CG on hand eye co-ordination & finger dexterity

#### 4. Discussion

This study confirms that cursive hand writing practice and basketball dribbling training had produced improvements in hand eye co-ordination, finger dexterity and handwriting of the primary school children but there was a trend in favor of the basketball dribbling practice combined with cursive writing.

**Hand eye co-ordination:** The cursive writing group and combined training group significantly improved the hand eye co-ordination from pretest to post test. The hand eye co-ordination increased in cursive training group from pretest (29) to post test (18), combined training group from pretest (28) to post test (13). Thus hand eye co-ordination had significantly improved pretest to post test in all the two groups with no changes in control group. The result of the present study is in line with previous study (Norbert Hagemann et al. (2006) found that the perceptual training can improve hand eye co-ordination.

**Finger dexterity:** The cursive writing group and combined training group significantly improved the finger dexterity from pretest to post test. The finger dexterity increased in cursive writing group from pretest (18.40) to post test (12.80), combined training group from pretest (18.87) to post test (10.27). Thus finger dexterity had significantly improved pretest to post test in all the two groups with no changes in control group. The result of the present study is in line with previous study (Norbert Hagemann et al. (2006) found that the perceptual training can improve finger dexterity.

#### 5. Conclusion

The present article discussed the features of perceptual training program in a two way approach comparing cursive writing practice and its combination with basketball dribbling practice. This suggested the potential benefits of such training for primary school. It is hoped that future research will continue to investigate sport participation as a facilitator of positive transfer of learning the school subjects and programs to further build the theoretical bases for such interventions and examine their efficacy.

Observing the result derived from the effect of basketball dribbling practice, it is concluded that the skill related drills and specific cursive writing practices are the sources to develop hand eye co-ordination, finger dexterity and cursive writing of the primary school children.

#### References

- [1] Abernethy B, Wood JM. *Optometry Vision Sci.* 1977;74(8):646-65.
- [2] Abernethy B. *American Journal of sports medicine.* **1996**;24(6):S89-S92.
- [3] Atkins DL. *Journal of Science and Medicine in Sport.* **1998**;1(1): 3 - 17.
- [4] Balasaheb T, Maman P, Sandhu JS. *Serbian journal of sports sciences.* **2008**;2(1):17-23.

- [5] Coffey B, Reichow A. Visual performance enhancement in sports optometry. Sport vision, DFC Loran and CJMaceren London: Butterworths-Heinemann, Ltd. 1995.
  - [6] Cross ES, Stadler W, Parkinson J, Schütz- Bosbach S, Prinz W. The influence of visual training on predicting complex action sequences. *Human Brain Mapping.* 2011.
  - [7] Hopwood MJ, Mann DL, Farrow D, Nielsen T. *International Journal of Sports Science and Coaching.* **2011**;6(4):523-36.
  - [8] Jocelyn faubert; *journal of clinical sports psychology*(2012),6,85-102
  - [9] Randy Smith 2007) 2007 Dynamic Edge Sports Vision Training Centers.  
<http://www.dynamicedge.ca/basketball.html#top>
- Journal**
- [10] Kluka D, Love P, Kuhlman J, Hammach G, Wesson M. *International Journal of Sports Vision.* **1996**;3(1):23-34.
  - [11] Kluka D. Visual skills: *ASAPHERED journal.* **1991**;14(1):41-3.
  - [12] Kruger P, Campher J, Smit C. *African Journal for Physical, Health Education, Recreation and Dance (AJPHERD).* **2009**;15(4):605.
  - [13] McLeod B. *Canadian Journal of Sports Sciences.* **1989**;14:127-35.
  - [14] Paul M, Biswas S K, Sandhu J S. *Brazilian Journal of Biomotoricity.* **2011**;5(2):106.
  - [15] Paul Ward et al; *journal of exercise psychology* (2003)25,93-111.
  - [16] Revien L, Gabor M. Sportsvision: Dr. Revien's eye exercise program for athletes: Workman Pub.; 1981.
  - [17] Szymanski J, Lowe H, Szymanski D, Ciciarella C, Lowe D, Gilliam S, et al. *The Journal of Strength & Conditioning Research.* **2011**;25:S49.

#### Websites

- [18] <http://www.nha-handwriting.org.uk/handwriting/why-is-handwriting-important>, (2016) National Handwriting Association 2 *Moths Grace, Basingstoke, Hampshire, RG24 9FY, United Kingdom*; Email: [nha.finance@btconnect.com](mailto:nha.finance@btconnect.com)
- [19] tony 2015; the music parents guide; <http://www.musicparentsguide.com/2015/02/17/student-s-really-quit-musical-instrument-parents-can-prevent/>
- [20] Steven Churchill 2014 <http://higherpayingskills.com/2011/12/improve-concentration-attention-span/#ixzz35wne5LxF>
- [21] Williams AM, Davids K. *Coaching Focus.* 1994;26:6 - 9.
- [22] Wilson TA, Falkel LJ. *Sports Vision: Training for Better Performance.* Champaign IL: Human Kinetics; 2004.
- [23] Wood JM, Abernethy B. *Optometry & Vision Science.* 1997;74(8):646.
- [24] <http://www.theatlantic.com/education/archive/2013/10/parents-ruin-sports-for-their-kids-by-obsessing-about-winning/280442/>
- [25] Franklin covey (2013) <http://www.franklincovey.com/leadership/seven-habits-signature.php>