

[< Back to results](#) | 1 of 1[Export](#) [Download](#) [Print](#) [E-mail](#) [Save to PDF](#) [Add to List](#) [More... >](#)[Full Text](#) [View at Publisher](#)International Journal of Ophthalmology [Open Access](#)
Volume 10, Issue 9, 18 September 2017, Pages 1460-1464

Visual efficiency among teenaged athletes and non-athletes (Article)

Omar, R.^a [✉](#), Kuan, Y.M.^a, Zuhairi, N.A.^a, Manan, F.A.^b, Knight, V.F.^c [🔗](#)^aSchool of Healthcare Sciences, Faculty of Health Sciences, University Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur, Malaysia^bDepartment of Optometry and Vision Science, Kulliyah of Allied Health Sciences, International Islamic University Malaysia, Bandar Indera Mahkota, Kuantan, Pahang, Malaysia^cFaculty of Medicine and Defence Health, National Defence University of Malaysia, Sungai Besi Camp, Kuala Lumpur, Malaysia

Abstract

[View references \(24\)](#)

● **AIM:** To compare visual efficiency, specifically accommodation, vergence, and oculomotor functions among athletes and non-athletes. ● **METHODS:** A cross-sectional study on sports vision screening was used to evaluate the visual skills of 214 elementary students (107 athletes, 107 non-athletes), aged between 13 and 16y. The visual screening assessed visual parameters such as ocular motor alignment, accommodation, and vergence functions. ● **RESULTS:** Mean visual parameters were compared between age-group matched athletes (mean age 14.82±0.98y) and non-athletes (mean age 15.00±1.04y). The refractive errors of all participants were corrected to maximal attainable best corrected visual acuity of logMAR 0.0. Accommodation function assessment evaluated amplitude of accommodation and accommodation facility. Vergence functions measured the near point of convergence, vergence facility, and distance fusional vergence at break and recovery point. Ocular motor alignment was not statistically significant between both groups. Athletes had a statistically significant amplitude of accommodation for both the right eye ($t=2.30$, $P=0.02$) and the left eye ($t=1.99$, $P=0.05$). Conversely, non-athletes had better accommodation facility ($t=-2.54$, $P=0.01$) and near point of convergence ($t=4.39$, $P<0.001$) when compared to athletes. Vergence facility was found to be better among athletes ($t=2.47$, $P=0.01$). Nevertheless, non-athletes were significantly better for both distance negative and positive fusional vergence. ● **CONCLUSION:** Although the findings are still inconclusive as to whether athletes had superior visual skills as compared to non-athletes, it remains important to identify and elucidate the key visual skills needed by athletes in order for them to achieve higher performance in their sports. © 2017, International Journal of Ophthalmology (c/o Editorial Office). All rights reserved.

Author keywords

Accommodation Athletes Non-athletes Phoria Sports Vergence

ISSN: 22223959

Source Type: Journal

Original language: English

DOI: 10.18240/ijo.2017.09.20

Document Type: Article

Publisher: International Journal of Ophthalmology (c/o Editorial Office)

References (24)

[View in search results format >](#) All [Export](#) [Print](#) [E-mail](#) [Save to PDF](#) [Create bibliography](#)Metrics [?](#)0 Citations in Scopus
0 Field-Weighted Citation ImpactPlumX Metrics [v](#)

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)[Set citation feed >](#)

Related documents

Refraction, static and kinetic visual acuity of junior baseball players

Edagawa, H. , Mochizuki, S. , Matsubara, M. (2012) *Japanese Journal of Clinical Ophthalmology*

Effect of yellow-tinted lenses on visual attributes related to sports activities

Kohmura, Y. , Murakami, S. , Aoki, K. (2013) *Journal of Human Kinetics*

Visuo-oculomotor skills related to the visual demands of sporting environments

Ceyte, H. , Lion, A. , Caudron, S. (2017) *Experimental Brain Research*[View all related documents based on references](#)[Find more related documents in Scopus based on:](#)

-
- 1 Miller, B.T., Clapp, W.C.
From vision to decision: The role of visual attention in elite sports performance
(2011) *Eye and Contact Lens*, 37 (3), pp. 131-139. Cited 6 times.
doi: 10.1097/ICL.0b013e3182190b7f
View at Publisher
-
- 2 Christenson, G.N., Winkelstein, A.M.
Visual skills of athletes versus nonathletes: development of a sports vision testing battery.
(1988) *Journal of the American Optometric Association*, 59 (9), pp. 666-675. Cited 47 times.
-
- 3 Zwierko, T.
Differences in Peripheral Perception between Athletes and Nonathletes
(2008) *Journal of Human Kinetics*, 19, pp. 53-62. Cited 23 times.
doi: 10.2478/v10078-008-0004-z
View at Publisher
-
- 4 Gavkare, A.M., Surdi, A.D., Nanaware, N.L.
Auditory reaction time, visual reaction time and whole body reaction time in athletes
(2013) *Indian Medical Gazette*
-
- 5 Akarsu, S., Çalışkan, E., Dane, Ş.
Athletes have faster eye-hand visual reaction times and higher scores on visuospatial intelligence than nonathletes
(2009) *Turkish Journal of Medical Sciences*, 39 (6), pp. 871-874. Cited 9 times.
<http://journals.tubitak.gov.tr/medical/issues/sag-09-39-6/sag-39-6-8-0809-44.pdf>
doi: 10.3906/sag-0809-44
View at Publisher
-
- 6 Griffin, J.R.
Binocular Anomalies: Procedures for Vision Therapy
(1982) *Professional Press Books*
-
- 7 Scheiman, M., Wick, B.
(2008) *Clinical Management of Binocular Vision: Heterophoric, Accommodative, and Eye Movement Disorders*. Cited 276 times.
Lippincott Williams & Wilkins
-
- 8 Morrison, C., Schatz, S., Walker, S.
Visual performance of athletes versus non-athletes
(2001) *Binocular Vision/Pediatrics*
-
- 9 Coffey, B., Reichow, A.
Athletes vs non-athletes: Static visual acuity, contrast sensitivity, dynamic visual acuity
(1989) *Invest Ophthalmol Vis Sci*, 30, p. 517. Cited 5 times.
-

- 10 Jafarzadehpur, E., Yarigholi, M.R.
Comparison of visual acuity in reduced lamination and facility of ocular accommodation in table tennis champions and non-players
(2004) *Journal of Sports Science and Medicine*, 3 (1), pp. 44-48. Cited 9 times.
[View at Publisher](#)
-
- 11 Stine, C.D., Arterburn, M.R., Stern, N.S.
Vision and sports: a review of the literature.
(1982) *Journal of the American Optometric Association*, 53 (8), pp. 627-633. Cited 55 times.
-
- 12 Hughes, P.K., Bhundell, N.L., Waken, J.M.
Visual and psychomotor performance of elite, intermediate and novice table tennis competitors
(1993) *Clinical and Experimental Optometry*, 76 (2), pp. 51-60. Cited 25 times.
doi: 10.1111/j.1444-0938.1993.tb05090.x
[View at Publisher](#)
-
- 13 Clark, J.F., Ellis, J.K., Bench, J., Khoury, J., Graman, P.
High-performance vision training improves batting statistics for University of Cincinnati baseball players
(2012) *PLoS ONE*, 7 (1), art. no. e29109. Cited 21 times.
<http://www.plosone.org/article/fetchObjectAttachment.action?uri=info%3AAdoi%2F10.1371%2Fjournal.pone.0029109&representation=PDF>
doi: 10.1371/journal.pone.0029109
[View at Publisher](#)
-
- 14 Faul, F., Erdfelder, E., Lang, A.-G., Buchner, A.
G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences
(2007) *Behavior Research Methods*, 39 (2), pp. 175-191. Cited 8717 times.
<http://www.springerlink.com/content/1554-351x/>
doi: 10.3758/BF03193146
[View at Publisher](#)
-
- 15 Gall, R., Wick, B., Bedell, H.
Vergence facility: Establishing clinical utility
(1998) *Optometry and Vision Science*, 75 (10), pp. 731-742. Cited 32 times.
doi: 10.1097/00006324-199810000-00018
[View at Publisher](#)
-
- 16 Poltavski, D.V., Biberdorf, D.
Screening for lifetime concussion in athletes: Importance of oculomotor measures
(2014) *Brain Injury*, 28 (4), pp. 475-485. Cited 9 times.
doi: 10.3109/02699052.2014.888771
[View at Publisher](#)
-
- 17 Pan, C.-W., Ramamurthy, D., Saw, S.-M.
Worldwide prevalence and risk factors for myopia
(2012) *Ophthalmic and Physiological Optics*, 32 (1), pp. 3-16. Cited 265 times.
doi: 10.1111/j.1475-1313.2011.00884.x
[View at Publisher](#)

- 18 Laby, D.M., Kirschen, D.G., Pantall, P.
The visual function of olympic-level athletes - An initial report

(2011) *Eye and Contact Lens*, 37 (3), pp. 116-122. Cited 10 times.
<http://journals.lww.com/claajournal/pages/default.aspx>
doi: 10.1097/ICL.0b013e31820c5002

[View at Publisher](#)

- 19 Erickson, G.B.
(2007) *Sports Vision: Vision Care for the Enhancement of Sports Performance*. Cited 26 times.
Butterworth-Heinemann Medical

- 20 Hofstetter, H.
Useful age-amplitude formula
(1950) *Optom World*, 38, pp. 42-45. Cited 40 times.

- 21 Chen, A.H., Abidin, A.H.
Vergence and accommodation system in Malay primary school children
(2002) *Malays J Med Sci*, 9 (1), pp. 9-15. Cited 11 times.


- 22 Abraham, N., Srinivasan, K., Thomas, J.
Normative data for near point of convergence, accommodation, and phoria

(2015) *Oman Journal of Ophthalmology*, 8 (1), pp. 14-18. Cited 11 times.
<http://www.ojonline.org/>
doi: 10.4103/0974-620X.149856

[View at Publisher](#)

- 23 Falkowitz, C., Mendel, H.
The role of visual skills in batting averages
(1977) *Optometric Weekly*, 68, pp. 33-36. Cited 6 times.

- 24 Coffey, B., Reichow, A.
Optometric evaluation of the elite athlete
(1990) *Probl Optom*, 2, p. 32. Cited 19 times.

 Omar, R.; School of Healthcare Sciences, Faculty of Health Sciences, University Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur, Malaysia; email: r_omar@ukm.edu.my

© Copyright 2017 Elsevier B.V., All rights reserved.

[< Back to results](#) | 1 of 1

[^ Top of page](#)

About Scopus

[What is Scopus](#)
[Content coverage](#)
[Scopus blog](#)
[Scopus API](#)
[Privacy matters](#)

Language

[日本語に切り替える](#)
[切换到简体中文](#)
[切换到繁體中文](#)
[Русский язык](#)

Customer Service

[Help](#)
[Contact us](#)

