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Judul artikel : The difference of physical fitness of short stature children with and without Channa striata extract (CSE) supplementation

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Original Article

The difference of physical fitness of short stature children with and without *Channa striata* extract (CSE) supplementation

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Abstract

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Background : Physical fitness is affected by aortic elasticity which is increased appropriately with insulin like growth factor-1 (IGF-1). *Channa striata* extract (CSE) supplementation increases arginine serum level and further increases IGF-1 level, endothelial dysfunction remodeling, and physical fitness. The current study aimed to explore the difference in physical fitness of short stature children with and without CSE supplementation.

Methods : This cross sectional study was conducted on 100 short stature children (male 58; female 42; CSE 50; placebo 50) aged 8–12 years in Brebes, Central Java Indonesia. Short stature was defined as the height/age Z score between -2 and -3 based on WHO 2007 growth chart standard. Physical fitness was measured by modified Harvard step test as stated as VO₂max, physical activity by physical activity record and stated as physical activity level (PAL). Data were analyzed by independent t-test and Pearson correlation.

Results : VO₂max level was higher in CSE 41.67 ± 6.967 ml/kg/minutes and placebo 41.16 ± 5.238 mL/kg/minutes, $p=0.682$. Hemoglobin level was higher in CSE than placebo (13.12 ± 0.932 ; 12.99 ± 0.878) g/dL; $p=0.5020$. All children revealed an active category on PAL. The results showed a significant relationship between PAL and physical fitness, hemoglobin and PAL on CSE ($p<0.05$), however there was no correlation between hemoglobin level and physical fitness.

Conclusion : In general, physical fitness in short stature children were categorized in the good category. There was no differences between hemoglobin level and PAL in both of groups. There was no difference between physical fitness in short stature children with CSE supplementation or placebo.

Keywords : physical fitness, short stature, physical activity, hemoglobin level

Bukti Konfirmasi Submit Artikel

No	Perihal	Tanggal
1.	Bukti submit	23-12-2021
2.	Bukti reviewer comments 1	01-03-2021
3.	Bukti reviewer comments 2	24-03-2021
4.	Bukti acceptance	15-04-2021

1. Tanggal 23 Desember 2020

The screenshot displays the Medica Hospitalia journal submission workflow interface. The page is titled "Medica Hospitalia : Journal of Clinical Medicine" and shows the "Publication" workflow stage. The "Production" tab is active, displaying submission files and pre-review discussions.

Submission Files:

File Name	Date	Type
2071_mexitalia, (Mexitalia) The difference of physical fitness of short stature children .docx	December 23, 2020	Article Text

Pre-Review Discussions:

Name	From	Last Reply	Replies	Closed
[MHJCM] Editorial Assignment	erwinantospog	2020-12-23 05:43 AM	0	<input type="checkbox"/>
SIMILARITY	erwinantospog	2021-04-01 08:21 AM	0	<input type="checkbox"/>

Participants:

- Section editor: Dr.dr.Sp.U Eriawan Agung Nugroho
- Author: Dr.dr.Sp.A(K) Maria Mexitalia

The interface also shows a "Submission published" notification and a "Help" button.

2. Tanggal 1 Maret 2021 Reviewer 1

Tambahkan informasi lain yang ingin disampaikan :

- No EC belum disebutkan
- Penjelasan kenapa 50 sampel diexclude? harus dijelaskan dalam sampling method (sebaiknya lengkapi dengan consort diagram agar lebih mudah dipahami di poin mana data diambil)
- Bab Result...dikatakan "Correlation among three variables at the beginning of the study was not defined in the aim of the study" --> mestinya sudah tidak ditulis bahwa ini bukan tujuan...karena ini bukan lagi tesis
- Keterangan uji statistik sebaiknya ditulis di footnote tabel
- Uji korelasi lemah...jadi sebaiknya ditulis "weak correlation "
- Diskusi : paragraf 1 --> sebaiknya tegas mengatakan tak ada perbedaan krn nilai Vo2 max sangat similar, jadi tdk membingungkan pembaca.
- Dalam diskusi, penulis hanya membandingkan dengan penelitian lain tp sebgiaan belum ada kenapa hasil berbeda..
- Limitation -- bahwa ini tidak diukur sebelum pemberian, jadi tidak bisa disimpulkan langsung krn pemberian, karena data sebelum pemberian tdk ada.
- Referensi : belum konsisten penulisannya, jurnal nama full atau abbreviasi? ada yang tdk ada vol dan hal , dll.

Results

Observational-analytical study with cross sectional design was conducted in Brebes region on May 2016 to children with short stature aged 8 to 12 year who were treated with CSE supplementation or placebo for 6 months period at Cimohong Elementary School, Kluwut 1 Elementary School, Kluwut 2 Elementary School, Grinting 2 Elementary School, Kecamatan Bulakamba, Brebes region, Central Java. This study was conducted to 150 children with short stature who were already treated with CSE supplementation or placebo every day for 6 months using randomized double blind technique. A total of 100 out of 150 met the inclusion criteria, 50 children were excluded. Characteristics of the subjects is presented in Table 1.

Table 1. Characteristics of the subjects

Variable	CSE (n=50)	Placebo (n=50)
Gender		
Male	28	30
Female	22	20

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Commented [au2]: Why excluded?

Commented [au3]: Sebaiknya dilengkapi diagram cara merekrut subyek (consort diagram)

This study analyzed correlation among variables of VO_{2max} , hemoglobin and physical activity level using Pearson correlation. ~~Correlation among three variables at the beginning of the study was not defined in the aim of the study.~~ However, after collecting and analyzing data, we tried to explore the correlation among VO_{2max} , hemoglobin and physical activity level based on the literatures. The analysis revealed *weak* positive correlation between physical activity level and VO_{2max} ; and *weak* negative correlation between Hb level and physical activity level on Supplementation group, which is presented in Table 3.

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Table 3. Correlations among VO_{2max} , Hb and physical activity level (*Pearson correlation*)

Parameter	CSE n=50		Placebo n=50		Total n=100	
	r	p	r	p	r	p

* beri keterangan ujinya di bawah tabel ini

Discussion

~~Basic characteristics of the subjects between CSE supplementation groups matched the placebo groups including age, gender, HAZ and BMI for Age.~~ The findings of this study revealed ~~higher VO_{2max} on CSE supplementation group compared to placebo group 41.67 ± 6.967 ; 41.16 ± 5.238 mL/kg/minute)~~ but no significant difference was found on both groups ($p = 0,682$). VO_{2max} of both groups were classified as good physical fitness.²² Short stature is known to be associated with low IGF-1 level.¹¹ IGF-1 level in blood is affected by food intake particularly proteins and minerals.¹⁴ IGF-1 level can be raised by increasing protein consumption.²³ In this study, we expected increased level of IGF-1 in children who received CSE supplementation every day for 6

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children with short stature assessed using standing long jump, handgrip and 1-mile run were lower compared to normal children. Whereas in malnourished group, physical fitness was poorer compared to normal children which was assessed using handgrip method (in boys), standing long jump, handgrip and 1-mile run, and 10 x 5 m run (in girls).²⁹

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This study analyzed correlations among variables : hemoglobin level, VO_{2max} , and physical activity level. There was positive correlation between [hysical activity level and physical fitness in supplementation group with $r = 0.316$ ($p < 0.05$); and negative correlation between hemoglobin level and physical activity level on supplementation group with $r = -0.280$ ($p < 0.05$). No significant correlation between hemoglobin level and VO_{2max} on both groups, physical activity level and VO_{2max} on placebo group, and between hemoglobin level and physical activity level on placebo group. This findings revealed CSE supplementation did not affect hemoglobin level, physical activity level and VO_{2max} . The findings on supplementation group in this study was consistent with the findings of Moselakgomo VK et al investigation to 1361 children aged 9 to 12 year in South Africa, showing that children with low physical fitness was associated with low physical activity.³⁰ Denker M et al reported positive correlation between daily physical activity of children aged 7.9 to 11.1 year assessed using accelerometer with $r = 0.23$ $p < 0.05$.³¹ The correlations of the variables on placebo groups was consistent with the findings of

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In conclusion, high physical activity level and low BMI might decrease hemoglobin level. Hida A et al revealed hemoglobin level measurement using non-invasive vascular monitor and physical activity level by assessing 24-hour activity.³³ Bermtsen S et al conducted a cross sectional study to 2537 children age 9 to 10 year to figure out correlation between physical activity level and lung functional capacity. The study revealed higher lung functional capacity in children aged 9 to 10 year with high physical activity level.³⁴ The study did not explore the causality between lung functional capacity and physical activity level. Rowland T et al investigated 39 healthy boys aged 12 year and revealed VO_{2max} was found higher in children with high physical activity level compared to children with low activity level (166 ± 9 mL/kg/minute; 127 ± 11 mL/kg/minute) and maximal stroke index assessed using echocardiography was associated with VO_{2max} ($r = 0.52$, $p < 0.05$).³⁵ The study used cycling test method to assess VO_{2max} .

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This study has several limitations. Our data lacked on information of classification short stature and dietary intake of the subjects. We did not conduct echocardiography to assess aortic elasticity and maximal stroke index associated with VO_{2max} .

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Conclusion

Physical fitness of children who have short stature after CSE supplementation as well as placebo are categorized as good. No difference found on physical fitness assessed by using Harvard step test, hemoglobin level and physical activity level in short stature children with and without CSE supplementation

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4. Montanelli D, Young M. Patterns of stunting and potential explanatory factors. *Ad*

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3. Tanggal 24 Maret 2021 Reviewer 2

Tambahkan informasi lain yang ingin disampaikan :

Penelitian ini merupakan penggalan dari penelitian lain yang tidak dapat dipisahkan untuk dianalisis tersendiri, karena merupakan hasil akhir dari suatu penelitian intervensi. Tidak ada variabel perancu yang dilihat, tidak ada informasi kondisi awal. Disain disebut sebagai cross sectional, padahal ini merupakan bagian akhir dari suatu intervensi sehingga tidak dapat dikatakan sebagai disain cross sectional. Saran perbaikan: sertakan deskripsi variabel pada sebelum intervensi, juga deskripsi variabel-variabel perancu, perbedaannya antara kedua kelompok, dan disainnya eksperimental, bukan cross sectional.

Results

Observational-analytical study with cross sectional design was conducted in Brebes region on May 2016 to children with short stature aged 8 to 12 year who were treated with CSE supplementation or placebo for 6 months period at Cimohong Elementary School, Kluwut 1 Elementary School, Kluwut 2 Elementary School, Grinting 2 Elementary School, Kecamatan Bulakamba, Brebes region, Central Java. This study was conducted to 150 children with short stature who were treated with CSE supplementation or placebo every day for 6 months using randomized double blind technique. A total of 100 out of 150 met the inclusion criteria, 50 children were excluded. Characteristics of the subjects is presented in Table 1.

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We used modified version of Harvard step test to assess physical fitness in this study by using a platform at a height of 25 cm we expected would dfit the subjects with short stature aged 8 to 12 year. The height of the platform is in the range of staircase height/bench height which is around 6-20 inches.²⁰ This modification is different from Harvard step test conducted by Mexitalia M et al that assessed body composition correlation with physical fitness by using Harvard step test and 20 m shuttle run test in obese children. The subjects of the study were children of elementary school age with normal stature and the platform used is at the height of 30 cm.²⁴ The subjects of this study were children at elementary school aged 8-12 year who can perform Harvard step test cooperatively.

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This study revealed higher hemoglobin level on CSE supplementation group compared to placebo group (13.12 ± 0.932 vs 12.99 ± 0.878 g/dL) but no significant difference was found ($p = 0.502$). Whereas physical activity level on both groups showed no significant difference ($1.76 \pm$

Conclusion

Physical fitness of children who have short stature after CSE supplementation as well as placebo are categorized as good. No difference found on physical fitness assessed by using Harvard step test, hemoglobin level and physical activity level in short stature children with and without CSE supplementation.

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