INTERNATIONAL SEVEN JOURNAL
OF MULTIDISCIPLINARY
ISSN: 2764-9547

Physical condition, global self-esteem, and academic performance in adolescence

Condição física, autoestima global e rendimento académico na adolescência

DOI: 10.56238/isevmjv3n2-006
Receipt of originals: 15/02/2024
Publication acceptance: 03/04/2024

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ABSTRACT

To know better the global self-esteem of adolescents, to know how global self-esteem and different levels of physical condition are related; to know how global self-esteem relates to male *versus* female. And determining how global self-esteem is associated with academic performance, according to gender and age, is an important and pertinent task in the current school context.The sample of the present study consists of 1327 participants, 711 females (53.58%), aged between 12 and 17 years. Physical condition was assessed using the *Fitnessgram;* academic performance through the arithmetic average of the subjects and global self-esteem by Rosenberg's global self-esteem scale (1965), adapted by Romano, Negreiros and Martins (2007). It was found that there is no statistically significant relationship between the different groups of physical condition and global self-esteem, in the overall sample and in both sexes. In the overall sample, overall self-esteem is not significantly associated with academic performance. In males, the correlation is significant, positive and weak. In females, the correlation is not significant. Overall self-esteem is not related to age, in the total sample and in both sexes. The self-esteem of male participants differs statistically significantly from that of females.

Keywords: Teenager, Global self-esteem, Physical condition, Academic performance, Gender.

INTRODUCTION

The body is the instrument par excellence, in which the human being best reveals himself. It is through the body that we explore space from an early age, that sexuality, state of health, abilities, joys, sorrows and also appearance are expressed. The corporeal self occupies a privileged place of the *self (*Harter, 1999*)*, because it constitutes our main reference, and assumes a nuclear *interface* with the environment. The term self-esteem means "reverence for oneself", the "I" belongs to the values, beliefs, and attitudes we hold about ourselves (D'Mello, Monteiro & Pinto, 2018). Since adolescence is a period marked by physical, psychological and contextual

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changes and transitions, global self-esteem can be an indicator of how adolescents face and manage these challenges. (Birkeland, Melkevik, Holsen, & would, 2012; Ryan, Shin, & Makara, 2013). It is a particularly important period, allowing us to investigate stability and changes in global self-esteem (Harter, 1999).

The impact of social support on adolescent self-esteem is also recognized, namely support from mother, father or friends, and is correlated with adolescent self-esteem and well-being (Ikiz & Cakar, 2010). According to Fouchard and Courtinant-Camps (2013), "*profound physical, psychological and social changes affect this phase of development*". For Birgisdóttir (2017), low self-esteem in adolescents is associated with low physical and mental health, on the other hand, high self-esteem is related to greater well-being (Baumeister, 2003).

According to Ahmed et al. (2017), participation in physical activities promotes a positive development of habits, healthy lifestyles, which will have health implications and ensures psychological health benefits. Likewise, Veleska, Geckova, Rujineld and van Dijk (2012) consider that high self-esteem has often been associated with behaviors in which physical activity and health are reinforced.

For Bernardo (2003), self-esteem "*is the individual's evaluation or feeling of his or her image, that is, it implies a feeling of satisfaction with oneself through which one judges a person with value depending on what can be considered a person with value*."

Self-esteem is conceived as a judgment of personal value or value and refers to the evaluative component of the Self, which develops from the negotiation between the perceived self and the ideal self. (Maltesi, Alesi & Alin, 2012).

Adolescence according to several authors (e.g., Schirtcliff, 2009; Fouchard & Courtinant, 2013), means a critical and sensitive period for the development and reorganization of several systems: neuroendocrine; ostearticular and muscular; cardiorespiratory, for example, and this restructuring is subject to risks and opportunities. Self-esteem is not safe from this process. For Altintas and Asçi (2008), adolescence represents the period of transition, marked by the emergence of newly discovered cognitive abilities and changing social expectations, which profoundly shape and alter the nature of self-esteem.

According to Fouchard and Courtinant (2013), self-esteem is a process of construction at the psychosocial level that has to do with a dynamic of complex interactions between the subject and other signifiers and that plays with a dynamic of social comparisons. Harter (1999), in order to specify a theory of determinants and implications of self-esteem, included sex as one of the variables to be considered. According to Harter (1999), adolescent girls consider physical

appearance as one of the most important variables to sustain their self-esteem, compared to boys. Also according to (Harter, 1999), girls in early adolescence have lower self-esteem compared to boys of the same age group, and physical appearance during adolescence is also the most important domain and most strongly correlated with overall self-esteem.

Raudsepp, Liblik and Hannus (2002) analysed the relationship between body self-perceptions, physical activity (moderate to vigorous) and found that boys obtained better results in terms of body self-esteem, self-perceptions of sports competence, physical condition and strength, compared to girls. But in physical attraction, girls showed superior results to boys. Clay, Vignoles and Dittmar (2005) also observed that self-esteem progressively decreases in girls between 11 and 16 years of age.

Bernardo (2003) conducted a study with the aim of evaluating the effects of an Adventure Sports program on the self-esteem and body self-perceptions of young participants. The instrument used was the *Physical Self-Perception Profile for Children and Youth* (Whitehead, 1995, adapted to the Portuguese population by Bernardo and Matos, 2003). The young adolescents who participated did not have significant changes in self-esteem, body self-perceptions and in the importance attributed to it after the application of the program. The author suggests that the time of application of the program was probably insufficient, that is, perhaps the time of exposure of young adolescents to the program should have been prolonged. This allows us to reflect on the fact that the modification of constructs of a self-perceiving nature requires time and persistence. On the other hand, Birkeland et al. (2012) perceived high global self-esteem during adolescence, an opinion that, as found, diverges from other studies (e.g. Clay et al., 2005; Inchley, Kirby, & Currie, 2011; Raudsepp et al. 2002).

Blomfield & Barber (2009), based on an extracurricular physical activity program applied to an Australian sample of 1489 young adolescents, 56% of whom were girls, observed improvements in the overall self-esteem of these young people. In this logic of approach, they concluded that adolescents with a low level of motor development have low self-perceptions; The impact of motor competence differs between boys and girls, with boys excelling in this domain.

According to Fonseca (2009), obese adolescents of both sexes had decreased levels of self-esteem, associated with feelings of sadness, loneliness, nervousness and risk behaviors. Obese adolescents develop negative self-images, which may persist and continue into adulthood. Generally, these young people choose younger children to play with, in order to avoid the emission of value judgments and possible criticism.

Inchley, et al. (2011), refer to the importance of physical self-perception in relation to physical activity behavior in adolescents, boys and girls. There is strong evidence that girls have more negative self-perceptions than boys, and these differences are apparent as early as 11 years of age.

Marius, Grosu and Petrehus (2010), in order to identify determinants of physical self-esteem and body mass index (BMI) in Romanian adolescents, obtained negative correlations between BMI and all self-perceptions ($p < 0.05$), except for strength, which shows a positive correlation ($p = 0.01$). It was observed that most components of physical self-esteem were negatively correlated with the growth of body mass index (BMI), it is understood that self-perceptions will decrease as physical activity levels decrease.

Lubans and Cliff (2011) conducted a study with a sample of 106 young adolescents, in which 54 were boys (mean age of 15 years) and observed that in girls, physical self-esteem was significantly inversely associated with body fat ($r = - 0.42$; $p < 0.01$), and positively associated with total relative strength ($r = 0.41$; $p < 0.01$), but not at total absolute strength ($r = 0.07$; $p = 0.62$). The authors recommend that physical activity be promoted in order to increase muscle strength. Cruz, Santos and Rodrigues (2016) conducted a research in order to characterize the self-concept and self-esteem of adolescents practicing water sports (rowing, sailing, canoeing and surfing). Based on a sample of 103 adolescents (59 boys), aged between 11 and 17 years, the self-esteem scale of Peixoto and Almeida (1999) was applied. They observed statistically significant differences in different age groups in terms of self-esteem between boys and girls.

Fouchard & Courtinant-Camps (2013) assessed global and physical self-esteem. They had a sample of 579 young people, 299 girls, aged between 11 and 17 years. The mean age was 13.34 years. The young participants in this research responded to the Rosenberg scale (1965). The results also point to significant differences in global self-esteem as a function of the age and gender of the participants. This may refer to the difficulties of girls assuming physical appearance (stereotyped images in the media of Western societies). As a result, adolescents internalize a body ideal of thinness.

Ahmed et al. (2017), in order to know the implications that active versus non-active lifestyles have on global self-esteem, physical self-esteem, goal orientation and ego orientation, conducted a study based on a sample of 200 participants, in which 100 were active and 100 were non-active. The youngsters ranged in age from 11 to 17. The active participants had a mean age of 13.18 years. The results showed a significant difference in both groups, in all health parameters related to the components of physical activity, self-esteem and goal orientation.

Active students have high self-esteem and task orientation, while inactive students show low self-esteem and high levels of ego orientation. It was also found that adolescents with high involvement in physical activity had healthy weight and body composition, less fat and higher levels of cardiorespiratory fitness, flexibility and greater muscle strength and endurance, which is associated with functional capacity. The study also reported that physically active boys and girls obtained higher results in all subscales of physical self-esteem compared to their less active counterparts.

Similarly, in a study conducted by Altintas and Asçi (2008), physically active boys and girls obtained higher results in all subscales of physical self-esteem than less active counterparts.

Alves-Martins, Peixoto and Gouveia-Pereira (2002) found that there are significant differences between the self-esteem of students with academic success and those who failed at the level of the 7th grade, but these differences disappear in the 8th and 9th grades. They also observed that school performance has an important effect on self-esteem, especially in younger people. However, all young people with good academic performance have greater value in terms of self-esteem. According to the authors, young people attach less importance to school-related areas. According to Alves-Martins et al. (2002), students with poor school results, in order to protect their self-esteem, invest more in social relationships and sports, for example.

Joshi and Srivastava (2009), in a study in which they analysed the differences in overall self-esteem, gender and academic achievement of 400 young people, 200 boys, aged between 12 and 14 years, found significant differences between boys and girls, with the averages being higher in boys.

Preeti, Kamar, Belmani and Singh (2016) conducted a study with the aim of identifying the relationship between self-esteem, adjustment and academic performance of students from a rural area in a school situation. The study had an experimental design, in which 200 adolescents, 100 males, selected by convenience sampling, participated. The evaluations were carried out using an inventory for school students and the Rosenberg scale. Academic performance was carried out through the self-reported result of the previous semester. Research has shown that high self-esteem averages and a good adjustment affect academic performance in a positive way. Although Ikiz and Cakar (2010) found statistically significant differences in the levels of self-esteem of adolescents according to gender, there is a statistically significant and positive relationship between the levels of self-esteem of adolescents and the levels of all perceived social support agents. Therefore, it can be inferred that regardless of gender, when adolescents' levels of social support increase, their levels of self-esteem also increase.

Pushkarna (2017) found that self-esteem and academic performance were significantly correlated, so the higher the levels of self-esteem, the higher the academic performance. It should also be noted that academic performance only varied significantly according to some sociodemographic variables, such as age and birth order.

According to Kugbey, Mawulikem and Atefoe (2015), parenting styles have a significant effect on adolescents' self-esteem and academic performance. However, no differences were found between the sexes in terms of self-esteem and academic performance.

For Birkeland et al. (2012), there is considerable individual variation in changes in global self-esteem from early adolescence to young adulthood, suggesting the existence of a significant amount of heterogeneity in global self-esteem trajectories. According to Maltesi et al. (2012), social intelligence is generally understood as the ability to produce appropriate behaviors in order to achieve desired social goals. There are theoretical and empirical reasons for making various general claims about its articulation into three different components: perceptual, cognitive, and behavioral. In the present study, females showed a lower level of self-esteem compared to males. Male self-esteem is documented as being higher and appears to be more influenced by goals associated with independence and autonomy, while female self-esteem is more defined by goals characterized by sensitivity.

Birgisdóttir (2017) conducted a study that aimed to analyze the self-esteem of adolescents, with regard to the difference between the sexes and the impact of the intervention on physical activity. The sample was randomly drawn from four schools with a total of 233 participants (150 girls and 83 boys), with an average age of 16 years. Participants were divided into the four study groups according to the following criteria: 58 in the pedometer group, 61 in the pedometer and physical activity diary group, 57 in the physical activity diary group, and 57 in the control group. In conclusion, the analysis of the study revealed the main effect of time on self-esteem for both research groups and gender. And non-significant results for the interaction between self-esteem and physical activity. The intervention in the study did not affect the participants' self-esteem.

Also noteworthy is a study conducted by Veselska et al. (2012), carried out in Slovakia, with a sample of 3694 students, with a mean age of 14.3 years and a standard deviation of 0.62. In this sample, 49% were boys. In summary, the authors concluded in this study that more physical activity corresponds to higher self-esteem, with boys reporting greater physical activity and higher self-esteem than girls. Vesleska et al., (2012), also considered that physical activity is one of the possible ways to improve physical health during adolescence, as well as the

development of healthy patterns at this stage and that it will probably continue into adulthood. D'Mello et al. (2018) conducted a descriptive study that aimed to determine the level of self-esteem in students with low academic performance. This study also aimed to understand the socioeconomic context of the participants, to assess their level of self-esteem and the differences between genders, in the level of self-esteem and academic performance. With a staff of 50 students (25 girls and 25 boys), from public schools. The ages ranged from 13 to 15 years of age, coming from two private secondary schools in the district of Dakshina (Canada). This study informs us that 76% of students have a higher level of self-esteem, have poor academic performance. So, the hypothesis of a significant correlation between self-esteem and good academic performance does not happen in this study. It then points to a gender difference between males and females, but with no significant correlation between self-esteem and academic performance. It was also concluded in this study that the educational system, the psychological environment, the family, colleagues, teachers, are important in determining the degree of performance in school. Thus, it is considered that the school has a potential to repair the global self-esteem of young adolescents, and the teaching activity is very important. The classroom climate, the school offer in curricular and extracurricular terms, should provide young people with rewarding activities that are challenging and can contribute to the development of various skills. The school should not exacerbate, but rather blur social and gender inequalities.

In summary, it can be seen that the results on the relationship between physical condition, physical activity and overall self-esteem suggest the tendency for the positive effects of physical activity to correspond to better self-esteem and on the influence of self-esteem on academic results. However, there is contradictory information, that is: there are studies that show the influence of better self-esteem corresponding to better academic results and others that do not refer to significant effects, at a statistical level, on the relationship between these variables.

In the context of the above, the objective of this research is to determine how the overall self-esteem at the level of the total sample and in both sexes, is related to the three levels of physical condition; to know how the global self-esteem is associated with academic performance at the global level and as a function of the sex; to verify whether the overall self-esteem of the male sex, differs statistically significantly from the feminine one. And, determine how overall self-esteem and age are related.

METHOD

SAMPLE

The sample was obtained by convenience, consisting of 1327 participants, aged between 12 and 17 years, of which 711 (53.48%) participants were female. Of the total number of participants, 62.10% were in the healthy zone, 19.29% in the risk zone and 18.69% in the high risk zone, with regard to the relationship between physical condition and overall self-esteem.

The participants in this study do not have *mental* , physical, sensory or emotional handicaps. They attend regular schools at the level of the 3rd cycle of schools in the Algarve region.

INSTRUMENTS

Sociodemographic characterization – according to the nature and objectives of this study, it was considered pertinent to proceed with a brief sociodemographic characterization. (Appendix 6).

Physical Condition was assessed using the *Fitnessgram*, motor performance was assessed at three possible levels: 1 – The one who is in a risk zone and needs to improve; 2 – The one who is associated with some risk and also needs to improve; and 3 – Above or within the values of the healthy zone.

According to motor performance, there are values for boys and girls. (Appendix IV) Global self-esteem was assessed using the Rosenberg *(1965) self-esteem scale*, adapted to the Portuguese adolescent population by Romano, Negreiros and Martins (2007).

EVALUATION OF ACADEMIC PERFORMANCE

It was based on the arithmetic average of the nine subjects of the *curriculum*, which are repeated in the 3rd cycle of schooling.

DATA PROCESSING AND ANALYSIS PLAN

The computer software, *SPSS (Statistical Package for the Social Sciences)* version 25.0 of *IBM's Windows environment, was used*.

Descriptive statistics (mean and standard deviation) were used.

We opted for the application of a parametric test, the *Uni-Factorial* ANOVA test. Subsequently, in order to find out where the differences were, the *Post-Hoc test, Bonferroni's*

test, was used.In order to verify the existence of significant differences between females and males, the *Student's t-test was used.*

Pearson's r *test was used to determine the correlations between the variables global self-esteem and academic performance.*

The effect size was also determined based on *Cohen's* d and *η2 coefficients,* depending on the statistical test.

A significance level of 0.05 was considered. *α*

OTHER PROCEDURES

It should be noted that authorization was requested from the official bodies: National Institute for Data Protection; Ministry of Education; Regional Delegation of Education; Directors of the Groups that allowed us access to the data, the authorizations of the Parents and Guardians and informed consent with the students were also contemplated.

RESULTS

In order to know how physical condition is related to global self-esteem, the *Unifactorial ANOVA statistical test was used* (Table 10) and the following results were obtained: $F = 2.200$; *G. L.* = 2; $p = 0.111$. Therefore, no statistically significant differences ($p > 0.05$) were found between the means of global self-esteem in the three physical condition groups.

With regard to male participants, no statistically significant relationship was found between physical condition and overall self-esteem. Also using the statistical test called Uni-Factorial ANOVA, the following result was obtained: $F = 0.847$; *g.l.* = 2; $p = 0.429$.

Regarding the female gender, no statistically significant relationship was found between physical condition and overall self-esteem. Using the Uni-factorial ANOVA statistical test, the following results were obtained: $F = 0.956$; *G. L.* = 2; $p = 0.385$.

Table 1 - Characterization of the sample with regard to the relationship between physical condition and overall self-esteem as a function of physical condition, in the total number of participants.

Physical Condition	***N***	***M***	***D.P.***	***F***	***p***	***h2***
Global Sample				2,200	0,111	0,003
Healthy Zone	824	3,05	0,52			
Zone of some risk	256	2,98	0,54			
High-risk area	247	3,05	0,55			
Male				0,847	0,429	0,003
Healthy Zone	434	3,08	0,49			
Zone of some risk	87	3,02	0,55			
High-risk area	95	3,12	0,51			

Female				0,956	0,385	0,003
Healthy Zone	369	3,02	0,54			
Zone of some risk	169	2,95	0,58			
High-risk area	152	3,00	0,57			
Nota: *p<0,05; **p<0,01; ***p<0.001						

As can be seen in Table 10, the highest mean values in relation to overall self-esteem refer to participants who are in the high-risk zone. Participants who are in the healthy zone assume intermediate values. Participants who are in the risk zone assume a lower average value. However, the difference between means is not statistically significant ($p > 0.05$).

With regard to the female gender, there was also no statistically significant relationship ($p > 0.05$) between physical condition and overall self-esteem.

In order to determine whether overall self-esteem differs according to gender, the Student's t-test was used and the results indicate the existence of significant differences ($p < 0.05$) between the mean females and males ($t = 2.510$; *g.l.* = 1471.163; $p = 0.012$). Male participants had a higher mean value than females. According to *Cohen's d value*, the size of the effect can be considered negligible.

OVERALL SELF-ESTEEM/ACADEMIC PERFORMANCE

In order to determine the relationship between global self-esteem and academic performance, Pearson's correlation coefficient was used, obtaining a non-significant correlation ($r = 0.034$; $p = 0.194$) (Appendix 6 – *Statistical Outputs*, Study IV).

With regard to males, the correlation obtained is significant and positive, although weak ($r = 0.081$; $p = 0.035$). For females, there was no significant correlation ($r = 0.003$; $p = 0.944$) (Appendix 6 – *Statistical Outputs* , Study IV).

GLOBAL SELF-ESTEEM AND AGE

Pearson's *linear correlation coefficients* indicate that there were no significant correlations ($p > 0.05$) between overall self-esteem and age in the total sample ($r = - 0.042$; $p = 0.128$), and in both sexes: male ($r = - 0.059$; $p = 0.138$) and female gender ($r = - 0.027$; $p = 0.477$).

DISCUSSION

According to Standage and Gillison (2007), one of the main goals of the school system is to promote students' self-esteem, emotional well-being, and help them maintain satisfying relationships based on respect for themselves and others, at home, at school, at work, and in the community

According to Fox (2000), young people involved in sports and physical activity have higher levels of body self-perceptions, for example, body self-esteem and body image. They also tend to have higher self-esteem compared to their peers of the same age, who do not perform any physical activity.

Global self-esteem evolves with age, particularly sensitive in the period of puberty, between the ages of 12 and 13, at the heart of the great bodily and psychological transformation, precisely at the time when self-esteem scores are at their lowest. (Fouchard & Courtinan-Camps, 2013). However, in our study, the age variable is not statistically significantly related to self-esteem.

According to Preeti et al. (2016), teachers in schools should facilitate an effective interpersonal relationship between students and encourage increased self-esteem. Integrated projects, in which training is provided for families to better intervene in the self-esteem of their children, can be very important for the development of positive self-esteem among adolescents in schools, which is why projects such as School for Parents are so important, in which you can help develop skills in this area. In this sense, the study by Kugbey et al. (2015), highlights the type of parental education and the significant impact on adolescent psychosocial outcomes. They advise that parents and caregivers should ensure the use of best practices in early childhood education.

Corroborating Standage and Gillison (2007), it is admitted that Physical Education classes can, among other benefits, offer opportunities for children and adolescents to experience gains in physical fitness, find feelings of somatic well-being, skills, foster social interaction with peers and obtain reinforcement from others.

Marius et al. (2010), consider that the increase in physical activity, which should focus on physical activity and not focus attention, for example on body weight, should offer a more constructive approach to young people and avoid weight stigma. The authors advise the promotion of programs with a variety of motor skills, combined with moderate and vigorous intensity. In the studies conducted by Marius et al. (2010) and Birgisdótir (2017), boys have

higher mean values than girls in terms of overall self-esteem, which corroborates the results of the present study.

Fonseca (2009) considers that "*the obese adolescent thus becomes particularly vulnerable to the impact of the social feedback of his appearance, as a result of his cognitive capacity and growing dissatisfaction and the egocentrism that characterizes his age*." Corroborating this excerpt, according to Raudsepp (2004), positive self-perceptions cause young people to experience positive affect (e.g., pleasure, satisfaction, pride), and this results in an increase, or at least in the maintenance of an intrinsic motivational orientation, that is: high self-esteem, which is associated with many positive attributes and social behaviors, including leadership skills, satisfaction, decreased anxiety and increased physical performance. These ideas reinforce the importance of this type of research such as our study.

For Ticuson (2012), the focus of the student's attention, through encouragement and appreciation, increases self-esteem and, thus, motivation to learn. The increasing rate of extracurricular activities increases the integration of children in the group of students and thus decreases the risk of depression, with the family having a particular importance. On the other hand, the family and teachers have a positive attitude towards the needs of young people, which generates confidence, school performance and personal quality of life (Ticuson, 2012). That is why it is so important to have a full knowledge of the overall self-esteem of the young people in our schools. This type of research is always a motivational factor, as it makes it possible to help young people. And, by knowing the reality, the intervention will be more effective.

Unlike the study by Pushkarna (2017), which found a significant correlation between academic performance and overall self-esteem, in which these variables are significantly and positively correlated, D'Mello et al. (2018) also conducted a study in which the variables global self-esteem and academic performance were correlated, and found no statistically significant associations. In fact, there are contradictory results on this relationship between overall self-esteem and academic performance. In the present study, in the overall sample and at the female level, there were no significant correlations between overall self-esteem and academic performance. According to Alves-Martins et al. (2002), the fact that students with low academic performance do not affect their self-esteem even more after a certain age is due to strategies that young people use in order to preserve their self-esteem, attributing less importance to the school culture and dedicating themselves more to other activities, investing more in social relationships or sports, for instance. This may also help to understand the results obtained in the present

study, in which no significant correlations are found between academic performance and overall self-esteem.

Regarding the relationship between global self-esteem/age variables, in our study no statistically significant association was found between these variables, contrary to the studies by Peixoto and Almeida (1999) and Fouchard & Courtinant-Camps (2013), which point to statistically significant relationships between these variables and which is not in line with the results obtained in our study. We are aware that it is necessary to carry out more studies in this area, diversifying the samples, with regard to the levels of education and sociocultural context.

CONCLUSIONS

Physical condition and overall self-esteem are not related in the overall sample and in both sexes;

Male participants have higher values in global self-esteem compared to female participants;

Only in males was a statistically significant association found between overall self-esteem and academic performance;

The overall self-esteem of the participants is not related to age, either in the global sample or in each of the sexes.

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