

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Monitoring fitness levels and detecting implications for health in a French population - An observational study
<b>AUTHORS</b>	Nassif, Hala ; Sedeaud, Adrien; Abidh, Elisa; Schipman, Julien; Tafflet, Muriel; Deschamps, Thibault; Maillet, Hervé; Ovigneur, Hervé; Desgorces, François; Toussaint, Jean-François

### VERSION 1 - REVIEW

<b>REVIEWER</b>	<p>Jonatan R Ruiz, PhD                  Ramón y Cajal Research Fellow                  Department of Physical Education and Sport, School of Sport Sciences University of Granada, Ctra. Alfacar, s/n; Granada 18011 Spain</p> <p>I have no competing interest</p>
<b>REVIEW RETURNED</b>	29-Mar-2012

<b>GENERAL COMMENTS</b>	<p>The cross-sectional study entitled “Monitoring fitness levels and detecting implications for health on a large scale of the general population – An observational study” describes the fitness level of a relatively large sample of individuals from France”.</p> <p>The study merits on the relatively large sample measured, yet there are important methodological issues that deserve special attention, and that limits the generalizability of the results and its practical implications. Furthermore, the results presented are not novel, and are limited by the fact that it is not a longitudinal study. Therefore, the reader cannot really know whether fitness increase or decrease with age, but rather if fitness is higher or lower. It seems the same but it is not.</p> <p>Issues about reliability and validity of the tests also deserve a very special attention. Most of the tests used have been shown to be valid and reliable in youth, yet, whether they are equally valid and reliable in adults and older people is not known. The authors mention that they have done a methodological study, yet no information is provided in the present manuscript. It would be recommendable to add a summary in the present study of the validity and reliability results for each fitness test.</p> <p>Whereas most of the tests are well known in the literature, the Non-progressive 20m shuttle run is not. The authors should explain the rationale for using this test, as well as the rationale for measuring the other ones too.</p> <p>When analysing the association of BMI with fitness, the author should be careful with the fact that most of the tests are weight bearing tests. This has very important implications. As an example, it</p>
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	<p>is known that overweight and obese adolescents are stronger than their non-overweight peers, and this become apparent in non-weight bearing tests, such as the handgrip strength tests. In our cohorts, we have shown that overweight and obese adolescents present a lower performance in 20-m shuttle run, bent arm hang, standing long jump and shuttle run 4 x 10 m tests, but a higher performance in handgrip strength compared with normal weight. However, in weight-bearing tests, the association became non-significant after adjusting for fat mass. The authors should take into account these important methodological issues.</p> <p>Minor The authors highlight the sex differences across ages, yet this is very well known.</p> <p>Please add Ns for each age group in tables 2-4. In the results section it is mentioned that the age ranged from 4 to 80 years, yet in tables 2-4 the age range is different. Where are the younger and older individuals?</p>
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<b>REVIEWER</b>	Jérémy Vanhelst, PhD Antenne Pédiatrique du CIC (CIC-Inserm9301), Hôpital Jeanne de Flandre, CHRU de Lille, Lille, France
<b>REVIEW RETURNED</b>	31-Mar-2012

<b>THE STUDY</b>	Authors do not explain the contraindications. Moreover, the readers is not enough informed on the different test. There are many grammatical errors in the text.
<b>RESULTS &amp; CONCLUSIONS</b>	The manuscript describes an actual picture of the physical fitness level in a large sample (4-80 years old). The originality of this study was the large range of the age, but finally, the major population assessed was adolescents. Therefore, the study has less importance because many studies has been performed in children and adolescent on this topic (HELENA, AVENA, EYHS, IDEFICS).
<b>GENERAL COMMENTS</b>	<p>The manuscript describes an actual picture of the physical fitness level in a large sample (4-80 years old). The originality of this study was the large range of the age, but finally, the major population assessed was adolescents. Therefore, the study has less importance because many studies has been performed in children and adolescent on this topic (HELENA, AVENA, EYHS, IDEFICS). There are some grammatical errors throughout the manuscript, please verify. Comments are as follows:</p> <p>General comments:</p> <p>You do not mention if this study was approved by an ethic committe and if the participants have given an informed consent. As you know, the ethics committe is necessary for all studies performed in human, and the design of the study have to be in accordance with the ethical standards of the Helsinki Declaration of 1975, revised in 2008, and the European Good Clinical Practices. Please, clarify in the text if you have an ethic committee or not.</p> <p>Please, delete the word « we » throughout the manuscript and replace by passive sentences.</p> <p>Specific comments:</p>

	<p>Page 1 - title Please delete « on a large scale of the general population » and replace by « in french population ».</p> <p>Page 3 – Line 22 omit the sentence “Those.... litterature”.</p> <p>Page 4 – Line 24-25 Please, add references</p> <p>Page 5 – Line 10 Are there similar investigators during 2006 to 2012? The investigators were of health professional or not? How do you have determined the health contraindications? With a medical doctor?</p> <p>Page 6 – Line 1 Has the order of the tests been randomized?</p> <p>Page 7 – Table 1 The number of PCD is different between males and females for a similar year ? Is it normal ? Is there difference PCD according to the gender ?</p> <p>Page 11 – Line 9 Replace « in function » by « according to ».</p> <p>Page 11 - lines 23 to 28 It is not necessary to rewrite the results. Please, resume in one or two sentences.</p>
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### VERSION 1 – AUTHOR RESPONSE

Reviewer 1:

1. The study merits on the relatively large sample measured, yet there are important methodological issues that deserve special attention, and that limits the generalizability of the results and its practical implications. Furthermore, the results presented are not novel, and are limited by the fact that it is not a longitudinal study.

Authors' response: We thank the reviewer for his valuable comments as it will help in strengthening our study. The main objective of the following study was to analyze the results of the physical fitness tests without attempting generalization of the results but merely giving a picture of the results of a large sample in the French population. We understand that given the observational nature of the results the practical implications are limited. A longitudinal study would be interesting to see the evolution of physical fitness.

2. Issues about reliability and validity of the tests also deserve a special attention. Most of the tests used have been shown to be valid and reliable in youth, yet whether they are equally reliable in adults and older people is not known.

Authors' response: We agree with the comment of the reviewer regarding whether the tests are equally valid in adults and older people compared to children and adolescents. We have thus added a sentence in the conclusion part stating the need for further research in order to validate the following.

3. The authors mention that they have done a methodological study, yet no information is provided in the present manuscript. It would be recommendable to add a summary in the present study of the validity and reliability of results for each fitness test.

Authors' response: following the reviewer's suggestion we have added in the method section

information about the reproducibility study.

4. Whereas most tests are well known in the literature, the non-progressive 20m shuttle run is not. The authors should explain the rationale for using the test, as well as the rationale for measuring the other ones too.

Authors' response: The non-progressive 20m shuttle run has been used by the organizers of the event as it gives a suitable indicator of the cardio respiratory fitness. Following the reviewer's comment we added a part in the conclusion regarding the following possible bias.

The rationale for measuring the other tests comes from the need to evaluate the fitness level from different perspectives while taking into consideration the essential indicators that reflect fitness based on previously validated tests in the literature (flexibility, standing broad jump, push-ups...).

5. When analyzing the association of BMI with fitness, the author should be careful with the fact that most of the tests are weight bearing tests.

Authors' response: Following the reviewer's comment we have added in the discussion a sentence regarding the following comment.

6. The authors highlight the sex difference across ages, yet this is very well known.

Authors' response: We agree with the reviewer but this is just to confirm that the results are in accordance with the literature and the usual results.

7. Please add Ns for each age group in tables 2-4

Authors' response: We have added the Ns accordingly.

8. In the results section it is mentioned that the age ranged from 4 to 80 years old yet in table 2-4 the age range is different. Where are the younger and the older individuals?

Authors' response: In the results section we mention the total number of individuals that attended the physical fitness days and their ages ranged from 4 to 80 years old. However, the tests were not common for all the individuals except for the 8-60 thus for methodological reasons we chose to report the following age groups. As stated in the method section 'separate batteries of tests were designed for other age groups or subjects with health contraindications'. Nevertheless, some of the tests were similar and thus we were able to fit the bi-exponential model while including all age groups.

Reviewer 2:

1. The manuscript describes an actual picture of the physical fitness level in a large sample. The originality of the study was the large range of the age, but finally, the major population assessed was adolescents. Therefore, the study has less importance because many studies have been performed in children and adolescents on this topic (HELENA, AVENA, EYHS, and IDEFICS).

Authors' response: We would like to thank the reviewer for his valuable comments and suggestions. As stated by the reviewer the major population assessed finally was children and adolescents which from one point makes it interesting to compare with the HELENA, AVENA, EYHS and IDEFICS studies while taking in consideration methodological differences, and on the other hand this conclusion reveals an important information regarding who finally attended the organized events. In fact, as explained in the manuscript the following measurements have been done during promotional campaign days in different regions in France where everyone was invited to come and test his/her physical fitness. As it turns out, very few adults and elderly finally were enthusiastic to come. The following point is important and merits further reflection on how the promotion of the event was done and on the expectations of older individuals.

2. Authors do not explain the contraindications. Moreover, the readers is not enough informed on the different test.

Authors' response: Most of the tests used are based on well-known tests in the literature. The contraindications are not to perform the following tests if the person has a specific contradiction from his medical doctor regarding performing a physical effort without monitoring. Regarding the information about the tests, the non-progressive 20m shuttle run has been used by the organizers of the event. Following the reviewer's comment we added a part in the conclusion regarding the following possible bias.

The rationale for measuring the other tests comes from the need to evaluate the fitness level from

different perspectives while taking into consideration the essential indicators that reflect fitness based on previously validated tests in the literature (flexibility, standing broad jump, push-ups...).

3. You do not mention if this study was approved by an ethic committee and if the participants have given an informed consent. Please clarify in the text.

Authors' response: Following the reviewer's comment the following paragraph has been added in the method section.

The epidemiological data obtained for this study was collected by retrospectively pooling together results from the organizers of the event that declare their data collection to the CNIL (the National Commission of the Informatics and Liberty). This study therefore used a research protocol qualified as non-interventional, in which '...all acts are performed in a normal manner, without any supplemental or unusual procedure of diagnosis or monitoring.' (Article L1121-1 of the French Public Health Code). According to law, its approval therefore did not fall under the responsibility of a committee for the protection of persons (CPP). All data obtained from the organizers of the event was anonymous, declared to the CNIL and none of the information relayed to the researchers could lead to the identification of any subjects. The study analyzing the results of the previously collected data was designed and monitored by the IRMES committee.

4. Please delete the word 'we' throughout the manuscript and replace by passive sentences

Title: Please delete 'on a large scale of the general population' and replace by 'in a French population'

Page 3- line 22: omit the sentence 'those...literature'

Page 11- Line 9: replace 'in function' by 'according to'

Page 11- lines 23 to 28 please resume in one or two sentences.

Authors' response: Following the suggestion of the reviewer the changes have been done accordingly.

5. Are there similar investigators during 2006 to 2012? The investigators were of health professional or not?

Authors' response: Similar events have been organized until 2012. The investigators are health professionals (nurses, physical educators and trainers).

6. How do you have determined the health contraindications? With a medical doctor?

Authors' response: before the tests each person had to fill a form and answer questions regarding his/her health status (validated QAAP questionnaire that evaluates the readiness of the person to perform a form of physical activity) . If the person has contraindications from the medical doctor or if through his answers the health professional has doubt then the person would be recommended to get a written consent from his doctor before performing the physical fitness tests.

7. Has the order of the test been randomized?

Authors' response: The order of the tests has been planned by the physical educators.

8. The number of the PCD is different between males and females for a similar year is it normal? Is there a difference according to the gender?

Authors' response: There has been no specific planning to have a difference according to gender. For example, some PCD would have been performed in schools were there were only girls or vice versa thus leading to this minor difference.

## VERSION 2 – REVIEW

<b>REVIEWER</b>	Vanhelst Jérémy CIC-Inserm 9301 CHRU de Lille
<b>REVIEW RETURNED</b>	22-May-2012

<b>THE STUDY</b>	The text needs to be checked by a native speaker.
<b>REPORTING &amp; ETHICS</b>	There is no consent given by the participants.

## VERSION 2 – AUTHOR RESPONSE

We sincerely thank you for the valuable suggestions and comments, which have improved the quality of the paper.

Please find enclosed the revised manuscript with improvements in English and in editing.

We hope that our manuscript will be more suitable for publication in the BMJ open with all the suggested changes.