

BYLAE



BYLAAG A:

Riglyne aan outeurs:

“Child: Care, Health and Development”

Child: Care, Health and Development

Author Guidelines

The journal to which you are submitting your manuscript employs a plagiarism detection system. By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

1. GENERAL

Child: Care, Health and Development is an international, peer-reviewed journal which publishes papers dealing with all aspects of the health and development of children and young people. We aim to attract quantitative and qualitative research papers relevant to people from all disciplines working in child health. We welcome studies which examine the effects of social and environmental factors on health and development as well as those dealing with clinical issues, the organization of services and health policy. We particularly encourage the submission of studies related to those who are disadvantaged by physical, developmental, emotional and social problems. The journal also aims to collate important research findings and to provide a forum for discussion of global child health issues.

2. ETHICAL GUIDELINES

Child: Care, Health and Development adheres to the below ethical guidelines for publication and research.

2.1. Authorship and Acknowledgements

Authors submitting a paper do so on the understanding that the manuscript has been read and approved by all authors and that all authors agree to the submission of the manuscript to the Journal. ALL named authors must have made an active contribution to the conception and design and/or analysis and interpretation of the data and/or the drafting of the paper and ALL must have critically reviewed its content and have approved the final version submitted for publication. Participation solely in the acquisition of funding or the collection of data does not justify authorship.

Acknowledgements: Under acknowledgements please specify contributors to the article other than the authors accredited.

3. MANUSCRIPT SUBMISSION PROCEDURE

Manuscripts should be submitted electronically via the online submission site <http://mc.manuscriptcentral.com/cch>. The use of an online submission and peer review site enables immediate distribution of manuscripts and consequentially speeds up the review process. It also allows authors to track the status of their own manuscripts. Complete instructions for submitting a paper is available online and below. Further assistance can be obtained from Editorial Assistant Seb Atay at satay@wiley.com.

A covering letter must be submitted as part of the online submission process, stating on behalf of all the authors that the work has not been published and is not being considered for publication elsewhere.

Important note: All papers will go through a initial sifting process within the editorial board.

4. MANUSCRIPT TYPES ACCEPTED

Original Articles: Articles reporting original scientific data based quantitative or qualitative research are particularly welcomed. Articles should begin with a structured abstract and should ideally be between 2,000 and 3,000 words in length excluding tables and references. In the case of complex qualitative research reports, the editors may be prepared to extend the word limit to 5000 words.

Review Papers: The journal welcomes syntheses of research in the form of systematic reviews. The word limit may be extended, in some circumstances, to 5000 words. Reviews are structured in the same way as original research (see above). The journal will occasionally publish narrative reviews where it is felt that these will be of particular interest to the readers and will be important in encouraging debate.

Case Reports: The journal will very occasionally publish case reports but only where these are believed by the editors to hold important generalisable lessons for the clinical or scientific community. We would expect such reports to begin with a very brief narrative abstract. The main text (1500 words maximum) should include a brief description of the case followed by a short discussion section explaining the implications of the case for clinical practice or research. Normal processes of peer review apply.

Special Issues: From time to time the Editor will commission a special issue of the Journal which will take the form of a number of papers devoted to a particular theme.

5. MANUSCRIPT FORMAT AND STRUCTURE

Title Page: The title page should give both a descriptive title and short title. The title should be concise and give a brief indication of what is in the paper. Authors are required to detail in full: qualifications, current job title, institution and full contact details. Also a word count for the article and keywords should be given on the title page.

To allow double-blinded review, please submit (upload) your main manuscript and title page as separate files as explained in section 3.4.

Abstract: Structured abstracts, not more than 300 words, including background, methods, results and conclusions are preferred

Main Text

Generally, all papers should be divided into the following sections and appear in this order: Abstract (structured abstracts, not more than 300 words, including background, methods, results and conclusions are preferred); Introduction; Methods; Results; Discussion; Acknowledgements (these should be brief and must include references to sources of financial and logistical support); References; Tables; Figures.

References

References cited in the text should list the authors names followed by the date of their publication, unless there are three or more authors when only the first author's name is quoted followed by et al. References listed at the end of the paper should include **all** authors' names and initials, and should be listed in alphabetical order with the title of the article or book, and the title of the Journal given in full as shown:

Havermans, T. & Eiser, C. (1994) Siblings of a child with cancer. *Child: care, health and development*, **20**, 309-322.

Cart, P. (1984) Observation. In: *The Research Process in Nursing* (ed. D.F.S. Cormack), pp. XX-XX. Wiley-Blackwell, Oxford, UK.

5.4. Tables, Figures and Figure Legends

Figures and Tables: Always include a citation in the text for each figure and table. Artwork should be submitted online in electronic form. Detailed information on our digital illustration standards is available below. Any abbreviations used in figures and tables should be defined in a footnote.

BYLAAG B:

Riglyne aan outeurs:

“The South African Journal of Sports Medicine”

THE SOUTH AFRICAN JOURNAL OF SPORTS MEDICINE

Author Guidelines

MANUSCRIPTS

Shorter items are more likely to be accepted for publication, owing to space constraints and reader preferences.

Original articles not exceeding 3 000 words, with up to 6 tables or illustrations, are usually observations or research of relevance to sports medicine and exercise science. References should be limited to 15. Please provide a structured abstract not exceeding 250 words, with the following recommended headings: *Background, Objectives, Methods, Results, and Conclusion.*

Short reports, Commentaries or Case Studies, should be 1500 words or less, with 1 table or illustration and no more than 6 references. Please provide an accompanying abstract not exceeding 150 words.

Editorials, Opinions, etc. should be about 1000 words and are welcome, but unless invited, will be subjected to the SAJSM peer review process.

Review articles are rarely accepted unless invited.

Letters to the editor, for publication, should be about 400 words with only one illustration or table, and must include a correspondence address.

Obituaries should be about 400 words and may be accompanied by a photograph.

MANUSCRIPT PREPARATION

Refer to articles in recent issues for the presentation of headings and subheadings. If in doubt, refer to 'uniform requirements' - www.icmje.org.

Manuscripts must be provided in **UK English**.

Qualification, affiliation and contact details of ALL authors must be provided in the manuscript and in the online submission process.

Abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or

'Department of Health (DoH)'.

Scientific measurements must be expressed in SI units except: blood pressure (mmHg) and haemoglobin (g/dl). Litres is denoted with a lowercase 'l' e.g. 'ml' for millilitres). Units should be preceded by a space (except for %), e.g. '40 kg' and '20 cm' but '50%'. Greater/smaller than signs (> and <) should be placed immediately preceding the relevant number, i.e. 'women >40 years of age'. The same applies to $\pm$ and $^{\circ}$, i.e. '35 $\pm$ 6' and '19 $^{\circ}$ C'.

Statistical methods must be described with sufficient detail to enable a knowledgeable reader with access to the original data to verify the reported results. All data should be presented with appropriate indicators of measurement error or uncertainty (standard deviations or confidence intervals). Avoid sole reliance on statistical hypothesis testing, such as the use of *p*-values, which fails to convey important quantitative information. Precise *p*-values must be shown as indirect indications (such as $p > 0.05$ or $p = \text{NS}$) are unacceptable and difficult for other researchers undertaking meta-analyses.

General formatting

The manuscript must be in Microsoft Word or RTF document format. Text must be single-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes, with the exception of Tables).

ILLUSTRATIONS AND TABLES

If tables or illustrations submitted have been published elsewhere, the author(s) should provide consent to republication obtained from the copyright holder.

Tables may be embedded in the manuscript or provided as '**supplementary files**'. Tables must be numbered in Arabic numerals (1,2,3...) and referred to in the text (e.g. 'Table 1'). Table footnotes must be indicated with the use of the following symbols (in order): * † ‡ § ¶ || then ** †† ‡‡ etc.

Figures must be numbered in Arabic numerals and referred to in the text e.g. '(Fig. 1)'. Figure legends: Fig. 1. 'Title...'

REFERENCES

Authors must verify references from the original sources. *Only complete, correctly formatted reference lists will be accepted.* Reference lists must be generated manually and **not** with the use of reference manager

software.

References should be inserted in the text as superscript numbers, e.g. These regulations are endorsed by the World Health Organization,² and others.^{3,4,6}

All references should be listed at the end of the article in numerical order of appearance in the **Vancouver style** (not alphabetical order). Approved abbreviations of journal titles must be used; see the List of Journals in Index Medicus.

Names and initials of all authors should be given; if there are more than six authors, the first three names should be given followed by et al. First and last page, volume and issue numbers should be given.

Journal references:

Price NC, Jacobs NN, Roberts DA, et al. Importance of asking about glaucoma. Stat Med 1998;289:350-355. [http://dx.doi.org/10.1000/hgjr.182] [PMID: 2764753]

Book references:

Jeffcoate N. Principles of Gynaecology. 4th ed. London: Butterworth, 1975:96-101.

Chapter/section in a book:

Weinstein L, Swartz MN. Pathogenic properties of invading microorganisms. In: Sodeman WA jun, Sodeman WA, eds. Pathologic Physiology: Mechanisms of Disease. Philadelphia: WB Saunders, 1974:457-472.

Internet references:

World Health Organization. The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. Geneva: World Health Organization, 2002. <http://www.who.int/whr/2002> (accessed 16 January 2010).

Other references (e.g. reports) should follow the same format:

Author(s). Title. Publisher place: publisher name, year; pages.

Cited manuscripts that have been accepted but not yet published can be included as references followed by '(in press)'.

Unpublished observations and personal communications in the text must not appear in the reference list. The

full name of the source person must be provided for personal communications e.g. '...(Prof. Michael Jones, personal communication)'.

BYLAAG C:

Riglyne aan outeurs:

“Journal of Sports Medicine and Physical Fitness”

JOURNAL OF SPORTS MEDICINE AND PHYSICAL FITNESS

INSTRUCTIONS TO AUTHORS

Article types

Instructions for the most frequent types of articles submitted to the journal.

Editorials. Commissioned by the Editor in Chief or the Managing Editor, editorials deal with a subject of topical interest about which the author expresses his/her personal opinion. No more than 1000 words (3 typed, double-spaced pages) and up to 15 references will be accepted.

Original articles. These should be original contributions to the subject. The text should be 3000-5500 words (8 to 16 typed, double-spaced pages) not including references, tables, figures. No more than 50 references will be accepted. The article must be subdivided into the following sections: introduction, materials and methods, results, discussion, conclusions. In the introduction the aim of the study should be clearly summed up. The materials and methods section should describe in a logical sequence how the study was designed and carried out, how the data were analyzed (what hypothesis was tested, what type of study was carried out, how randomization was done, how the subjects were recruited and chosen, provide accurate details of the main features of treatment, of the materials used, of drug dosages, of unusual equipments, of the statistical method. In the results section the answers to the questions posed in the introduction should be given. The results should be reported fully, clearly and concisely supported, if necessary, by figures, graphs and tables. The discussion section should sum up the main results, critically analyze the methods used, compare the results obtained with other published data and discuss the implications of the results. The conclusions should briefly sum up the significance of the study and its future implications.

Review articles. Generally commissioned by the Editor in Chief or the Managing Editor, review articles should discuss a topic of current interest, outline current knowledge of the subject, analyze different opinions regarding the problem discussed, be up-to-date on the latest data in the literature. The text should be 6000-12000 words (17 to 34 typed, double-spaced pages) not including references, tables, figures. No more than 100 references will be accepted.

Text file

Manuscripts must be drafted according to the template for each type of paper (editorial, original article, review, case report, therapeutical note, special article, letter to the Editor).

The paper should be type written double spaced with margins of at least 2.5 cm on 212·297 mm format sheets (ISOA4). The formats accepted are Word and RTF. The text file must contain title, authors' details, notes, abstract, key words, text, references and titles of tables and figures. Tables and figures should be submitted as

separate files.

Title and authors' details

- Short title, with no abbreviations.
- First name and surname of the authors.
- Affiliation (section, department and institution) of each author.

Notes

- Dates of any congress where the paper has already been presented.
- Mention of any funding or research contracts or conflict of interest.
- Acknowledgements.
- Name, address, e-mail of the corresponding author.

Abstract and key words

Articles should include an abstract of between 200 and 250 words. For original articles and therapeutical notes, the abstract should be structured as follows: aim (aim of the study), methods (experimental design, patients and interventions), results (what was found), conclusion (meaning of the study). Key words should refer to the terms from Medical Subject Headings (MeSH) of MEDLINE/PubMed. No abstracts are required for editorials or letters to the Editor.

Text

Identify methodologies, equipment (give name and address of manufacturer in brackets) and procedures in sufficient detail to allow other researchers to reproduce results. Specify well-known methods including statistical procedures; mention and provide a brief description of published methods which are not yet well known; describe new or modified methods at length; justify their use and evaluate their limits. For each drug generic name, dosage and administration routes should be given. Brand names for drugs should be given in brackets. Units of measurement, symbols and abbreviations must conform to international standards. Measurements of length, height, weight and volume should be given in metric units (meter, kilogram, liter) or their decimal multiples. Temperatures must be expressed in degrees Celsius. Blood pressure must be expressed in millimeters of mercury. All clinical chemistry measurements should be expressed in metric units using the International System of Units (SI). The use of unusual symbols or abbreviations is strongly discouraged. The first time an abbreviation appears in the text, it should be preceded by the words for which it stands.

References

It is expected that all cited references will have been read by the authors. The references must contain only the authors cited in the text, be numbered in Arabic numerals and consecutively as they are cited.

Bibliographical entries in the text should be quoted using superscripted Arabic numerals. References must be set out in the standard format approved by the International Committee of Medical Journal Editors (www.icmje.org).

JOURNALS

Each entry must specify the author's surname and initials (list all authors when there are six or fewer; when there are seven or more, list only the first six and then "et al."), the article's original title, the name of the Journal (according to the abbreviations used by MEDLINE/PubMed), the year of publication, the volume number and the number of the first and last pages. When citing references, please follow the rules for international standard punctuation carefully.

Examples:

- Standard article.

Sutherland DE, Simmons RL, Howard RJ. Intracapsular technique of transplant nephrectomy. *Surg Gynecol Obstet* 1978;146:951-2.

- Organization as author

International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. *Ann Int Med* 1988;108:258-65.

- Issue with supplement

Payne DK, Sullivan MD, Massie MJ. Women's psychological reactions to breast cancer. *Semin Oncol* 1996;23(1 Suppl 2):89-97.

BOOKS AND MONOGRAPHS

For occasional publications, the names of authors, title, edition, place, publisher and year of publication must be given.

Examples:

- Books by one or more authors

Rossi G. *Manual of Otorhinolaryngology*. Turin: Edizioni Minerva Medica; 1987.

- Chapter from book

De Meester TR. Gastroesophageal reflux disease. In: Moody FG, Carey LC, Scott Jones R, Ketly KA, Nahrwold DL, Skinner DB, editors. *Surgical treatment of digestive diseases*. Chicago: Year Book Medical Publishers; 1986. p. 132-58.

- Congress proceedings

Kimura J, Shibasaki H, editors. *Recent advances in clinical neurophysiology*. Proceedings of the 10th International Congress of EMG and Clinical Neurophysiology; 1995 Oct 15-19; Kyoto, Japan. Amsterdam: Elsevier; 1996.

ELECTRONIC MATERIAL

- Standard journal article on the Internet

Kaul S, Diamond GA. Good enough: a primer on the analysis and interpretation of noninferiority trials. *Ann Intern Med* [Internet]. 2006 Jul 4 [cited 2007 Jan 4];145(1):62-9. Available from: <http://www.annals.org/cgi/reprint/145/1/62.pdf>

- Standard citation to a book on CD-ROM or DVD

Kacmarek RM. Advanced respiratory care [CD-ROM]. Version 3.0. Philadelphia: Lippincott Williams & Wilkins; ©2000. 1 CD-ROM: sound, color, 4 3/4 in.

- Standard citation to a homepage

AMA: helping doctors help patients [Internet]. Chicago: American Medical Association; ©1995-2007 [cited 2007 Feb 22]. Available from: <http://www.ama-assn.org/>.

Footnotes and endnotes of Word must not be used in the preparation of references.

References first cited in a table or figure legend should be numbered so that they will be in sequence with references cited in the text taking into consideration the point where the table or figure is first mentioned.

Therefore, those references should not be listed at the end of the reference section but consecutively as they are cited.

Titles of tables and figures

Titles of tables and figures should be included both in the text file and in the file of tables and figures.

File of tables

Each table should be submitted as a separate file. Formats accepted are Word and RTF. Each table must be typed correctly and prepared graphically in keeping with the page layout of the journal, numbered in Roman numerals and accompanied by the relevant title. Notes should be inserted at the foot of the table and not in the title. Tables should be referenced in the text sequentially.

BYLAAG D:

Riglyne aan outeurs:

“Journal of International Education Research”

JOURNAL OF INTERNATIONAL EDUCATION RESEARCH

Ronald C. Clute, Ph.D., Director

Manuscript Guidelines Please submit your paper in Microsoft Word or compatible format. Text should be formatted for letter size paper (8.5 x 11 inches) single-spaced at 10 points, Times New Roman, with one inch margins, left justified, and single-column. We generally follow American Psychological Association (APA) guidelines.

Structure of the Paper Title page Title Abstract Keywords Introduction Body of paper Tables, figures, etc. placed where they belong Conclusion Author biography including contact information for each author (not exceeding 100 words each) Acknowledgments (if applicable) References (American Psychological Association style) Appendices (if applicable)

Title Page The title page should contain the paper title and each author name, affiliation, mailing address, and email address with the contact author indicated.

Title The title should be concise, descriptive, and contain the keywords or key phrases. Search engines assume that the title contains all of the important words that describe the topic of the paper. **Acronyms** The use of acronyms should be avoided in the title and keywords unless widely recognized and understood.

Abstract Abstracts should not exceed 250 words. The abstract should contain all the keywords and key phrases at least once and more than once if necessary. Search engines rank articles higher if the keyword or key phrase being searched appears more often in the abstract. However, pointless repetition may result in the page being rejected by a search engine. Since most researchers read an abstract before reading the paper, abstracts must be written very well.

Keywords Select 3 or 4 keywords or key phrases that you would give a search engine if you were searching for your article. Avoid the use of general and plural terms, abbreviations, and non-descript words such as *and*, *of*, *or*, *the*, and so on. When selecting keywords, please keep in mind how search engines operate. A search on the key phrase “*women’s health*” does not yield the same result as separate searches on the words “*women’s*” and “*health*”. The ordering of keywords within a key phrase is also important if quotation marks are used because you are searching for words in a particular order. For example, a search for “*women’s health*” is not the same as “*health women’s*”.

Clute Institute journal articles are downloaded an average of 120,000 times a month. Approximately 70% of these downloads come from Google searches, so the proper use of keywords and key phrases is important. Many universities use journal article citation analysis to evaluate the importance of faculty research. Hence, being quoted by other authors is important.

Headings Four levels of headings are allowed. The first level should be **BOLD ALL CAPS**, second level **Bold**, third level *Italics*, and fourth Underlined.

Tables & Figures Use the Microsoft Word table function to create tables, not spreadsheets. Tables and figures should be located in the text and numbered sequentially using Arabic numerals, i.e., Table 1 and Figure 1. We print our journals in black and white; please take this into consideration when using color.

Abbreviations Abbreviations should be defined at first mention and used consistently thereafter. **Footnotes** Bottom of the page footnotes are preferred to end of the article endnotes.

References References should be arranged alphabetically and follow American Psychological Association (APA) style. References should not be inserted as footnotes. References in the text should include name and year. For example: “According to Bangs (2012)...” In print journal article citation: Bangs, J. (2012). Transforming A Business Statistics Course With Just-in-Time Teaching. *American Journal of Business Education*, 5(1) 87-94. Online journal article citation:

Kondonassis, Alex J. (2012). Some Key Evolutionary Changes In Global Economic Development: A Historical Perspective. *Journal of Applied Business Research*. The Clute Institute. Retrieved from: <http://journals.cluteonline.com/index.php/JABR/article/view/905/889> Book citation: Calfee, R.C. & Valencia, R.R. (1991). *APA guide to preparing manuscripts for journal publication*. Washington, DC: American Psychological Association.

English Language Support If your native language is not English, you may want to make use of an English language editing service to increase the quality of your paper. The use of these services is not required and does not guarantee acceptance for publication. The Clute Institute has worked with and recommends “Editage.com”, although there are many other companies providing this service.

Promoting And Publishing Quality Scientific Research Since 1985

BYLAAG E:

**Toestemmingsvorm van Departement van
Basiese Onderwys**



education

Lefapha la Thuto
Onderwys Departement
Department of Education
NORTH WEST PROVINCE

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OFFICE OF THE CHIEF OPERATIONS OFFICER: BRANCH: DISTRICT AND PROFESSIONAL OPERATIONAL SERVICES

Enquiries: Ms M.J. Mogotsi
Telephone: 018-3873411
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27 July 2009

To: Prof Anita E. Pienaar
Student: North West University

From: Mr M.A. Seakamela
Chief Operations Officer
Districts and Professional Operational Services

**SUBJECT: PERMISSION TO CONDUCT A RESEARCH PROJECT ON
RELATIONSHIPS OF MOTOR AND PHYSICAL PROFICIENCY OF 7
YEAR OLD CHILDREN WITH HEALTH, SPORT, SCHOOL AND
LEARNING READINESS: STRATEGIES IN THE NORTH WEST
PROVINCE**

Please be informed that permission has been granted for you to conduct research in the North West Department of Education. Approval is therefore granted under the following conditions:

- That consultation with the schools identified is done
- That the necessary information related to the evaluation process is shared with the school
- That any publication of information pertaining to the department should be done with the permission from the department
- That learning and teaching process is not compromised
- That the department be furnished with the outcomes of the research

Your input in contributing to the betterment of education will be appreciated

Best Regards

Mr M.A. Seakamela
Chief Operations Officer
Districts and Professional Operational Services

BYLAAG F:

Ingeligte Toestemmingsvorms

Afrikaans en Engels



NAVORSINGSPROJEK – 'n Profiel en strategieë ter verbetering van liggaamsamestelling, perseptueel-motoriese, fisieke en visuele vermoëns van 7-jarige kinders woonagtig in die Noordwes provinsie van Suid-Afrika.

Hierdie navorsingsprojek is goedgekeur deur die Onderwysdepartement sowel as die Etiese komitee van die Noordwes-Universiteit, Potchefstroomkampus. Toestemming is ook by u skoolhoof verkry om voort te gaan met die navorsing.

U kind is deel van die groep wat geselekteer is om aan bogenoemde navorsingsprojek deel te neem.

Die doel van hierdie navorsingsprojek is:

- Om inligting te versamel oor 7-jarige kinders se liggaamsamestelling, perseptueel-motoriese, fisieke en visuele vermoëns en bloeddruk en hieruit strategieë te ontwikkel ter verbetering van gesondheidsbevorderende - sowel as ander agterstande wat kinders se lewenskwaliteit en verdere ontwikkeling kan belemmer. Die fisieke toetse sal deur gekwalifiseerde navorsers uitgevoer word, is veilig om aan deel te neem, ouderdomgepas en verg min inspanning van die kind. Twee velvoue sal geneem word (een op die arm en een op die kuit).

Deur u kind aan die bogenoemde navorsingsprojek te laat deelneem, kan dit nie net vir u kind tot voordeel wees nie, maar ook vir ouers, onderwysers en kundiges, inligting verleen wat gebruik kan word om kinders van hierdie ouderdom se ontwikkeling te optimaliseer. Ons vra dus dat u dit sterk sal oorweeg om hom/haar te laat deelneem aan die navorsing. U is uiteraard geregtig om u kind op enige stadium, sonder enige verduideliking, te onttrek van die studie. Terugvoering sal aan die betrokke kinders se onderwysers en skole gegee word nadat alle toetsings wat op een dag sal geskied, afgehandel en die inligting verwerk is. Vir enige verdere inligting oor die projek, kan enige van die onderstaande persone gekontak word.

Prof. A.E. Pienaar
Projekleier
 (Skool vir Biokinetika, Rekreasie en Sportwetenskap)
 (018) 299 1796 (W)

Mev Chanelle Kemp
Kinderkinetikus, Navorser
 082 331 1494 / (018) 299 1797 (w)

Stuur asseblief hierdie vorm die VOLGENDE DAG terug skool toe, hetsy dit ingevul is al dan nie.

_____ ✂ _____ ✂ _____ ✂ _____

Ek as ouer verstaan dat ek onder geen verpligting is om my kind aan die navorsingsprojek te laat deelneem nie. Ek verstaan dat daar geen skade aan my kind berokken gaan word, hetsy fisies of geestelik nie. Ek verstaan ook dat daar geen kostes verbonde is aan die evaluering nie en dat dit ook nie sal inmeng met my kind se skoolaktiwiteite nie.

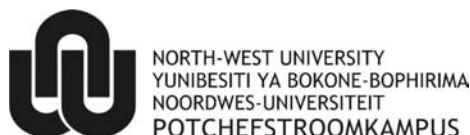
Hiermee gee ek _____

ouer/wettige voog van _____ (Kind se volle name en van)

_____ (Geboortedatum) toestemming dat hy/sy aan die navorsingsprojek mag deelneem.

Handtekening

Datum



RESEARCH PROJECT – A profile and strategies for improvement of body composition, perceptual-motor, physical and visual abilities of 7 year old children living in the North-West province of South Africa.

This research project is approved by the Department of Education and the Ethics committee of the North-West University, Potchefstroom Campus. The headmaster of your school has also agreed that we may continue with the project.

Your child is part of a group that were selected to participate in the following research project.

The aim of this research project is:

- To gain information about 7 year-old children's body composition, perceptual-motor, physical and visual abilities and blood pressure and to develop from these strategies to improve health promoting problems and other backlogs that can obstruct the quality of life and further development of children in this age group. The physical assessments will be done by qualified researchers, is safe for the children to participate in, is age specific and requires minimal effort of the child. Two skinfolds will be taken (one on the arm and one on the calf).

By allowing your child to take part in this research project, it will not only be beneficial for him/her, but will also provide information for parents, teachers and other specialists that they can use to optimize the development of children in this age group. We therefore would like to ask you to consider it strongly to allow your child to participate in the project. You are, however, entitled to withdraw your child at any time from the study, without any explanation. All testing will be completed in one day and feedback will be given to teachers and schools after the data is processed. For further information about this project, feel free to contact any of the persons indicated below.

Prof. A.E. Pienaar
Project Leader
(School for Biokinetics, Recreation and Sport Science)
(018) 299 1796 (W)

Mrs. Chanelle Kemp
Kinderkineticist, Researcher
082 331 1494 / (018) 299 1797 (w)

Please send this form back to school the NEXT DAY.

_____ ✂ _____ ✂ _____ ✂ _____

I, as the parent understand that I am under no obligation to let my child participate in this research project. I understand that my child would not be harmed in any way, physically or spiritually. I understand that there would be no costs involved in the evaluation and that the programme will not interfere with my child's school work.

Hereby I _____ parent/ legal caregiver of

_____ (Date of birth) give permission that he/she may participate in the
research project.

Signature

Date

BYLAAG G:

Bewegingsontwikkelingsprogramma

BEWEGINGSONTWIKKELINGSPROGRAMME

Die bewegingsontwikkelingsprogram van Skool 1 het bestaan uit sessies van 35 minute lank wat een keer per week gevolg is. Skool 1 se bewegingsontwikkelingsprogram is deur 'n geregistreerde Kinderkinetikus (met 'n graad in Menslike Bewegingskunde, en nagraadse spesialisering in motoriese ontwikkeling) saamgestel. Elke les in die program het bestaan uit 6 aktiwiteite wat grootspier- en perseptueel-motoriese aktiwiteite, naamlik ruimtelike oriëntering, statiese en dinamiese balans, hand-oogkoördinasie, voet-oogkoördinasie, motoriese beplanning en bilaterale integrasie ingesluit het. Die program se aanbieding berus grootliks op 'n proses-georiënteerde benadering waar die fundamentele boublokke vir effektiewe beweging en persepsie aangespreek word. Vervolgens voorbeelde van drie van die lesse van dié ontwikkelingsprogramme se inhoud:

Skool 1 - Ontwikkelingsprogram 1 (Proses-georiënteerd)

Voorbeeldles 1	
Aktiwiteit 1	Fundamentele vaardighede • Gallop • Glypassies • Paddaspronge
Aktiwiteit 2	Balans • Balanseer op verskillende liggaamsdele (bv. Hand en voet, hand en knie).
Aktiwiteit 3	Ruimtelike oriëntasie • Kruip onderdeur hindernis.
Aktiwiteit 4	Hand-oog koördinasie/Bilaterale integrasie • Bons en vang 'n bal.
Aktiwiteit 5	Hand-oog koördinasie/Motoriese beplanning • Gooi bal met linkerhand deur rooi hoepel.
Aktiwiteit 6	Ruimtelike oriëntasie • Touspring na beginpunt.

Voorbeeldles 2	
Aktiwiteit 1	Fundamentele vaardighede • Kameelloop • Wurmloop

- Aktiwiteit 2** Balans
- Hak-toon loop oor bruggie.
 - Spring met tweebene in hoepels.
- Aktiwiteit 3** Ruimtelike oriëntasie
- Spring voor, agter, links en regs van hoepel.
 - Klim deur hoepel.
- Aktiwiteit 4** Hand-oog koördinasie/Bilaterale integrasie
- Gooi boontjiesakkie met regterhand in linkerkant se emmer en met linkerhand in regterkant se emmer.
- Aktiwiteit 5** Hand-oog koördinasie/Motoriese beplanning
- Dribbel bal deur kegels met hande.
- Aktiwiteit 6** Ruimtelike oriëntasie
- Doen 10 stêrspronge.

Voorbeeldles 3

- Aktiwiteit 1** Fundamentele vaardighede
- Bobbejaanloop vorentoe en agtertoe
 - Huppel
 - Kraploop
- Aktiwiteit 2** Balans
- Hak-toon loop vorentoe en agteruit op bruggie.
 - Staan op eenbeen vir 10 sekondes (links en regs).
- Aktiwiteit 3** Ruimtelike oriëntasie
- Klim bo-oor hindernis en kruip onderdeur die volgende hindernis.
- Aktiwiteit 4** Hand-oog koördinasie/Bilaterale integrasie
- Gooi bal met regterhand na teiken teen muur aan linkerkant.
 - Gooi bal met linkerhand na teiken teen muur aan regterkant.
- Aktiwiteit 5** Hand-oog koördinasie/Motoriese beplanning
- Bons en vang 'n groot (20cm) bal.
 - Gooi en vang 'n groot bal.
- Aktiwiteit 6** Ruimtelike oriëntasie
- Leerders staan in 'n sirkel en houvas hande. Klim deur hoepel wat in sirkel rondbeweeg sonder om hande te los.

Die bewegingsontwikkelingsprogram van Skool 2 het ook bestaan uit sessies van 35 minute lank wat een keer per week gevolg is. Skool 2 se bewegingsontwikkelingsprogram is deur 'n Sportwetenskaplike (met 'n graad in Menslike Bewegingskunde, en nagraadse spesialisering in sportwetenskap) en 'n Arbeidsterapeut saamgestel en aangebied. Elke les in die program het bestaan uit 6 aktiwiteite wat krag, ratsheid en fynmotoriese aktiwiteite ingesluit het. Die program se aanbieding was grootliks gefokus op 'n taakgeoriënteerde benadering met die fokus om spesifieke take goed te bemeester. Vervolgens voorbeelde van drie van die lesse van dié ontwikkelingsprogramme se inhoud:

Skool 2 – Ontwikkelingsprogram 2 (Taak-georieënteerd)

Voorbeeldles 1	
Aktiwiteit 1	Oefenbal aktiwiteit • Leerder lê op sy/haar rug terwyl hy/sy die oefenbal tussen sy/haar hande vashou. Die tweede leerder staan oor die leerder en slaan die bal saggies af na die leerder se liggaam toe vir 10 sekondes.
Aktiwiteit 2	Ratsheidsleer aktiwiteit • Leerder hardloop met hoë knieë deur die ratsheidsleer.
Aktiwiteit 3	Oefenbal aktiwiteit • Leerder lê op sy/haar rug met knieë opgetrek na die liggaam en die sole van die voete wat boontoe wys. Die tweede leerder bons die oefenbal op die leerder se voete. Die leerder moet die bal in die lug opskop. Herhaal 10 keer.
Aktiwiteit 4	Ratsheidsleer aktiwiteit • Leerder hardloop sywaarts deur die ratsheidsleer.
Aktiwiteit 5	Fynmotoriese aktiwiteit
Aktiwiteit 6	Fynmotoriese aktiwiteit

Voorbeeldles 2	
Aktiwiteit 1	Oefenbal aktiwiteit • Leerder lê op sy/haar rug met arms vertikaal en handpalms na bo gerig. Die tweede leerder staan oor die leerder en bons die oefenbal op die leerder se hande. Die leerder moet die bal in die lug opslaan deur beide hande te gebruik en met 'n elmboogbeweging. Herhaal 10 keer.
Aktiwiteit 2	Ratsheidsleer aktiwiteit • Leerder hardloop en skop die boude met hakke deur die ratsheidsleer.

Aktiwiteit 3 Oefenbal aktiwiteit

- Leerder lê op sy/haar rug met die heupe en knieë teen 90° hoek gebuig. Die tweede leerder rol die oefenbal ferm teen die leerder se voete. Die leerder moet die bal terug na die tweede leerder toe skop. Herhaal 10 keer.

Aktiwiteit 4 Ratsheidsleer aktiwiteit

- Leerder spring met tweebene in elke blok van die ratsheidsleer.

Aktiwiteit 5 Fynmotoriese aktiwiteit**Aktiwiteit 6** Fynmotoriese aktiwiteit

Voorbeeldles 3	
Aktiwiteit 1	Oefenbal aktiwiteit
	• Leerder sit regop op die oefenbal, met die knieë teen 'n 90° hoek gebuig. Tweede leerder ondersteun die bal om stabiliteit te verseker. Leerders begin in die sit-posisie, loop hul bene weg van die bal en stop nie voordat hul skouers op die bal rus nie. Die leerder se liggaam is reguit en parallel met die vloer. Leerder rol terug na die beginposisie en herhaal 5 keer.
Aktiwiteit 2	Ratsheidsleer aktiwiteit
	• Leerders spring met eenbeen in elke blok van die ratsheidsleer (Eers regterbeen en dan linkerbeen).
Aktiwiteit 3	Oefenbal aktiwiteit
	• Leerder lê (op hul maag) oor die bal en tel boontjiesakkie met regterhand op. Leerder "loop" vorentoe op hande todat heupe op bal rus. Die tweede leerder ondersteun die bal om stabiliteit te verseker. Leerder hou aan met "loop" todat sy/haar knieë en uiteindelik sy/haar enkels op die bal rus. Leerder plaas boontjiesakkie binne die emmer.
Aktiwiteit 4	Ratsheidsleer aktiwiteit
	• Leerder spring met tweebene sywaarts deur ratsheidsleer.
Aktiwiteit 5	Fynmotoriese aktiwiteit
Aktiwiteit 6	Fynmotoriese aktiwiteit

Aktiwiteit 1 Oefenbal aktiwiteit

- Leerder sit regop op die oefenbal, met die knieë teen 'n 90° hoek gebuig. Tweede leerder ondersteun die bal om stabiliteit te verseker. Leerders begin in die sit-posisie, loop hul bene weg van die bal en stop nie voordat hul skouers op die bal rus nie. Die leerder se liggaam is reguit en parallel met die vloer. Leerder rol terug na die beginposisie en herhaal 5 keer.

Aktiwiteit 2 Ratsheidsleer aktiwiteit

- Leerders spring met eenbeen in elke blok van die ratsheidsleer (Eers regterbeen en dan linkerbeen).

Aktiwiteit 3 Oefenbal aktiwiteit

- Leerder lê (op hul maag) oor die bal en tel boontjiesakkie met regterhand op. Leerder "loop" vorentoe op hande todat heupe op bal rus. Die tweede leerder ondersteun die bal om stabiliteit te verseker. Leerder hou aan met "loop" todat sy/haar knieë en uiteindelik sy/haar enkels op die bal rus. Leerder plaas boontjiesakkie binne die emmer.

Aktiwiteit 4 Ratsheidsleer aktiwiteit

- Leerder spring met tweebene sywaarts deur ratsheidsleer.

Aktiwiteit 5 Fynmotoriese aktiwiteit**Aktiwiteit 6** Fynmotoriese aktiwiteit

BYLAAG H:

**Bewys van aanbieding van manuskripte vir die
verskillende joernale**

HOOFSTUK 3: “Child: Care, Health and Development**From:** satay@wiley.com**Sent:** 12 November 2012 12:01 AM**To:** chanellekemp@telkomsa.net**Subject:** Child: Care, Health & Development - Manuscript ID CCH-2012-0396

11-Nov-2012

Dear Mrs. Kemp,

Your manuscript entitled "A motor proficiency profile of Grade 1 learners in the North West Province of South Africa: NW-Child-Study" has been successfully submitted online and is presently being given full consideration for publication in Child: Care, Health & Development. Your manuscript ID is CCH-2012-0396.

Please mention the above manuscript ID in all future correspondence or when calling the Editorial Office with queries. If there are any changes to your mailing address or e-mail address, please log in to Manuscript Central at <http://mc.manuscriptcentral.com/cch> and edit your user information accordingly.

You can also view the status of your manuscript at any time by checking your Author Centre after logging in to <http://mc.manuscriptcentral.com/cch>

Thank you very much for submitting your manuscript to Child: Care, Health & Development.

Kind regards,

Seb Atay

Managing Editor

Child: Care, Health & Development

HOOFTUK 4: "The South African Journal of Sports Medicine"**From:** Mike Lambert [<mailto:Mike.Lambert@uct.ac.za>]**Sent:** Thursday, November 24, 2011 9:19 PM**To:** Chanelle Kemp**Subject:** Re: [SAJSM]

Dear Chanelle,

I'm happy to inform you that your paper "**The prevalence of hypertension and the relationship with body composition in Grade 1 learners in the North West Province of South Africa**" has been accepted for publication. The reviewer had a few minor comments, mostly grammar, which can be attended to rather easily. Please can you attend to the comments and send it back to me. I am finalising the final edition of the year and have sent most of the content to the publishers for processing. If you can get the paper back to me before 4pm on Friday, I will be able to include it in the last issue of the year. If you are unable to do this then I will include it in issue 1 2012. I look forward to hearing from you.

Kind regards

Mike Lambert

POSTAL ADDRESS:

Professor Mike Lambert

MRC/UCT Research Unit for Exercise Science and Sports Medicine,

P.O.Box 115,

Newlands,

7725

SOUTH AFRICA

phone: 021-6504558

fax: 021-6867530

HOOFSTUK 5: “Journal of Sports Medicine and Physical Fitness”

From: Paola Sabini - Edizioni Minerva Medica SpA [journals6.dept@minervamedica.it]

Sent: 20 July 2012 10:51 AM

To: chanellekemp@telkomsa.net

Subject: Scientific paper no. 4002 - J. SPORTS MEDICINE PHYS.FITN.

Attachments: JSM_4002_EVALUATIONSHEET.doc

Dear authors

I am pleased to inform you that your paper entitled:

**THE RELATIONSHIP BETWEEN THE BODY COMPOSITION AND MOTOR AND PHYSICAL
COMPETENCE OF GRADE 1 LEARNERS IN SOUTH AFRICA**

submitted to J. SPORTS MEDICINE PHYS.FITN. and registered with the number 4002 has been provisionally accepted by the Editorial Committee as ORIGINAL ARTICLE pending receipt of your reply to the suggestions of the referees. One of the two has in fact requested a number of modifications: I am therefore enclosing the evaluation sheet with the suggestions for modifying the text.

Your new corrected version should be sent **underlining and highlighting** the parts you have modified by e-mail to the address journals6.dept@minervamedica.it.

Awaiting receipt of your modified text so that we can get it into the press at the earliest, I send you my very best regards.

Sincerely,

Managing Editor

Prof. Alberto Oliaro

HOOFSTUK 6: “Journal of International Education Research”

From: Karen Smoody [karen@cluteinstitute.com]

Sent: 26 September 2012 10:33 PM

To: Anita.Pienaar@nwu.ac.za

Subject: JIER #5254 Acceptance

Attachments: 1 Call for Papers.pdf

Based on the recommendations of two independent reviewers and the editor regarding current editorial requirements, your manuscript entitled “The Effect Of School-Based Movement Programmes Based On Different Approaches On The Motor Proficiency Of Grade 1 Learners: NW-CHILD Study” has been accepted for publication in the *Journal of International Education Research*.

This acceptance is valid for one year; ***however, please send us the following prior to publication:***

- In the last paragraph of the Conclusion, please clarify the following sentence: “The study also did not have a control group that did not participate in a movement development programme.”

Please e-mail the above requirement to us rather than send a revised paper – thank you!

Congratulations on your successful acceptance, and thank you for allowing the Clute Institute to publish your research. Please reference *JIER #5254* in the subject of all future correspondence – thank you and have a great day!

Karen

The Clute Institute

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Littleton, CO 80128

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BYLAAG I:

Gepubliseerde navorsingsartikel

The prevalence of hypertension and the relationship with body composition in Grade 1 learners in the North West Province of South Africa

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Abstract

objective. To determine the prevalence of hypertension in Grade 1 learners in the North West Province of South Africa and to investigate the association between blood pressure (BP) and body composition of these children.

Methods. Data were collected by means of a stratified random sampling procedure from 816 Grade 1 learners (419 boys, 397 girls) with a mean age of 6.78 ± 0.49 years (mean $\pm$ SD), in the NW-CHILD-study. Height, weight, skinfolds (subscapular, triceps, calf) and waist circumference were measured. The international recommended cut-off values of Cole *et al.* (2000) for body mass index (BMI) were used. Hypertension, defined as the average of two separate BP (BP) readings, where the systolic BP and diastolic BP is >95 th percentile for age, sex and height, was determined by means of an Omron 705CP-II.

Results. The overall prevalence of prehypertension and hypertension was 8.5% and 24.9%, respectively. Both systolic and diastolic BP was positively associated with BMI, body fat percentage and waist circumference. Boys and girls showed a similar prevalence of hypertension. A higher percentage of black children were hypertensive compared with whites, although the difference in BP of the groups was not significant. A high percentage of children with normal weight also showed increased levels of BP.

Conclusions. High prevalences of hypertension were found in Grade 1 learners in the North West Province of South Africa. Small practical significant associations existed between BP and body composition. BP screening is therefore considered important in the paediatric population. Interventions which include physical activity are recommended to reduce potential cardiovascular complications and obesity among children. Other contributing factors to high BP amongst young children should also be investigated.

Introduction

High blood pressure (hypertension) is the greatest risk factor for cardiovascular disease,¹ which is responsible for up to 7 million deaths worldwide every year.² The Centres for Disease Control and Prevention (CDC) indicates that 1 in 3 adults in America have hypertension³ and the same trend is found in South Africa, where 55% of adults 30 years and older have hypertension.⁴

Until recently, hypertension was a rare phenomenon amongst children, possibly due to fewer environmental stressors, higher physical activity levels, a lower prevalence of obesity and a healthier lifestyle.⁵ Chiolerio *et al.*⁶ are of the opinion that the worldwide increase in obesity amongst children over the last two decades probably resulted in an increase in the incidence of hypertension in children.⁶ In this respect, Munter *et al.*⁷ found that the systolic and diastolic BP of children were respectively 1.4 mmHg and 3.3 mmHg higher in 1999 - 2000 than in 1988 - 1994 and attribute this increase in hypertension largely to the increased incidence of overweight children. Whitney and Rolfes⁸ report that obesity contributes to the development of hypertension because additional adipose tissue contains extra capillaries through which the blood has to pump and, consequently, puts extra strain on the heart and veins, which results in increased BP. A South African study on 5-year-old children indicated that 11.6% of these children suffered from hypertension,⁹ while the study of Monyeki *et al.*¹⁰ conducted on 6 - 13-year-old children from rural communities revealed that 1.0 - 5.8% of the boys and 3.1 - 11.4% of the girls had hypertension. In this study there was a direct association between the prevalence of hypertension amongst the children from rural communities and an increased body mass index (BMI).¹⁰

Research evidence indicates that even a moderate increase in BP could have a negative effect on the vascular structure and function of children.¹¹ Children with increased BP could develop target organ damage and retinal abnormalities.¹² Furthermore, such children are also more at risk of hypertension-related illnesses in their adult lives.¹³

Overweight and obesity have increased drastically in children over the last 2 decades.¹⁴ The phenomenon has occurred throughout the world, including in South Africa, and is regarded as a serious health problem as it could have an effect on current and future public health.¹⁵ Statistics in South Africa indicate that in children between the ages of 6 and 13 years, 14.0% and 3.2% of boys are overweight and obese respectively, compared to 17.9% and 4.9% of girls (overweight and obese).¹⁶

Sorof *et al.*¹⁷ further report that hypertension occurs in 33% of children who are obese compared with 11% in those children who are not obese. Various studies also show that overweight children display higher systolic BP than children of normal weight.^{5,18} A study

of 6 - 13-year-old South African children indicated that there is a positive correlation between the BMI and BP of the children, even after adjustments have been made for age, gender and height.¹⁹ The results of this study, however, are only based on children from disadvantaged communities.

Research indicates an increase in child obesity in South Africa and this could possibly contribute to an increased prevalence of hypertension amongst children in South Africa.²⁰ Because of the potential health risks of hypertension, action needs to be taken to address this incidence. However, to develop adequate preventive strategies, it is important to determine the relationship between BP and body composition in South African children. In particular there is a gap in the literature with regard to this relationship with- in the diverse population of South Africa, and especially the young child population. Only a few studies could be found that examined the relationship of hypertension with overweight in South African child populations,^{10,19} and the studies were mainly relevant to children of disadvantaged communities. Hence, the aim of this study was to determine the prevalence of hypertension in Grade 1 learners and, more specifically, to determine the relationship between the BP and body composition of Grade 1 learners in the North West Province.

Methods

Research group

The research formed part of the NW-CHILD (Child-Health-Integrated-Learning and Development) study. Grade 1 learners in the North West Province of South Africa served as the target population for the study. The total number of participants identified for the study was 880 Grade 1 learners. The research group was selected by means of a stratified random sample in conjunction with the Statistical Consultation Service of the North West University. To determine the research group, a list of names of schools in the North West Province was obtained from the Department of Education. From the list of schools in the North West Province, which are grouped in 4 education districts, each representing 12 - 22 regions with approximately 20 schools (minimum 12, maximum 47) per region, regions and schools were randomly selected with regard to population density and school status (quintile 1, i.e. schools from poor economic sectors to quintile 5, i.e. schools from good economic sectors). Boys and girls in Grade 1 were then randomly selected from each school. Twenty schools, from 4 districts with a minimum of 40 children per school and with an even gender distribution, were involved in the study. The total group that was measured consisted of 816 learners (419 boys and 397 girls) with an average age of 6.78 years and an ethnic distribution of 567 black, 218 white, 20 coloured and 11 Indian learners. Thirteen parents (1.5%) did not consent to participation, while the rest of the selected participants were absent at school on the day of testing or had to be excluded because of incorrect ages that were provided by the schools.

The principals of the various identified schools were asked for permission to collect the data during school hours. If the numbers of learners in the school allowed it, 60 Grade 1 learners were randomly selected and received informed consent forms that had to be completed by their parents. This was done to ensure that informed consent would be granted by the parents of a minimum of 40 learners who needed to be measured at each school. The learners whose parents reacted positively to the above-mentioned forms, underwent the tests.

Ethical approval for the execution of the study was obtained from the Ethics Committee of the NWU (No. NW 00070 09 S1). Permission was also obtained from the Education Department of the North West Province.

Anthropometric measurements

The anthropometric measurements included the following: height (cm), body mass (kg), 3 skinfolds (subscapular, triceps and medial calf) (mm) and waist circumference (cm). These variables measured were measured by trained postgraduate students in Kinderkinetics in accordance with the protocol of the International Society for the Advancement of Kinanthropometry.²¹ Height was measured bare-foot to the nearest 0.1 cm by means of a portable stadiometer, and body mass was measured with an electronic scale (BF 511, Omron) to the nearest 0.1 kg. From the height and body mass measurement the body mass index (BMI) was calculated for each participant. Skinfolds were measured with a pair of Harpenden skinfold callipers and each skinfold was measured twice to obtain the average of the two measurements. These skinfold measurements were selected because, according to Meredith and Welk,²² they show the highest correlation with the overall percentage of fat in the bodies of children. Because the BMI of children changes continually as they get older, Cole and co-workers²³ determined age-specific BMI cut-off values to identify obesity in growing children and these were used to categorise the participants into a normal weight, overweight or obese group. The cut-off values for 6-year-old overweight and obese children are $>17.34 \text{ kg/m}^2$ and $>19.65 \text{ kg/m}^2$, while for 7-year-old children they are $>17.75 \text{ kg/m}^2$ and $>20.51 \text{ kg/m}^2$, respectively.²³ Waist circumference, which was measured at the narrowest point between the lower costal (10th rib) border and the crista iliaca, was measured in the standing position with a standard measuring tape (0.1 mm intervals).

Blood pressure

BP was measured with an Omron 705CP-II, (Kyoto, Japan). The width of the cuff (small 17 - 22 cm, medium 22 - 32 cm, large 32 - 42 cm) was adapted to the arm width. BP was measured while the child was seated, with the left arm resting on a table top with the palm turned upwards. Duplicate readings were recorded after the child had rested for 5 minutes. The mean of the two readings was used to determine the BP. Normal BP is defined as systolic and/or diastolic BP less than the 90th percentile for age, gender and height according to the cut-off values of the National High BP Education Program Working Group (NHBPEP) on high BP in children and adolescents;²⁴ prehypertension is defined as systolic and/or diastolic BP greater than or equal to the 90th percentile, but less than the 95th percentile and paediatric hypertension is defined as systolic and/or diastolic BP greater than or equal to the 95th BP percentile for age, gender and height.²⁴

Statistical analyses

Statistica²⁵ was used to analyse the data. A proportionally stratified sample was drawn with regard to ethnicity by making use of the population constitution data from Statistics South Africa²⁶ to ensure that the data could be generalised to children in the North West Province. For the purpose of description, data were analysed on the basis of means, maximum and minimum values and standard deviations (sd). Data were also further analysed by making use of Spearman correlation coefficients to analyse the relationship between BP and body composition. For the interpretation of practical significance, the following guidelines of Cohen²⁷ concerning magnitude of effect were used, namely, $d>0.1$ indicates a small effect; $d>0.3$ indicates a moderate effect and $d>0.5$ indicates a large effect. In addition, use

Table I. Number and percentage of Grade 1 learners according to classification in BMI-groups

Group	Normal weight		overweight		obese		Total
	(n)	(%)	(n)	(%)	(n)	(%)	(N)
Group	721	88.4	64	7.8	31	3.8	816
Boys	378	90.2	27	6.4	14	3.3	419
Girls	343	86.4	37	9.3	17	4.3	397
White	175	80.3	29	13.3	14	6.4	218
Black	517	91.2	34	6.0	16	2.8	567

n = number of participants.

Table II. Prevalence of prehypertension and hypertension amongst Grade 1 learners according to BMI categories

	Normal weight (n=721)		overweight (n=64)		obese (n=31)		p for trend	Total	
	(n)	(%)	(n)	(%)	(n)	(%)		(n)	(%)
Prehypertension									
Boys	34	9.0	4	14.8	3	21.4	0.15	41	9.8
Girls	22	6.4	3	8.1	3	17.7	0.02	28	6.8
White	12	5.5	3	1.4	4	1.8	0.08	19	8.7
Black	41	7.2	4	0.7	2	0.4	0.05	47	8.3
Total group	56	7.8	7	10.9	6	19.4	0.008	69	8.5
Hypertension									
Boys	96	25.4	3	11.1	5	35.7	0.07	104	24.8
Girls	82	23.9	11	29.7	6	35.3	0.14	99	24.9
White	40	18.3	4	1.8	3	1.4	0.004	47	21.6
Black	130	22.9	10	1.8	7	1.2	0.47	147	25.9
Total group	178	24.7	14	21.9	11	35.5	0.028	203	24.9

BMI = body mass index; n = number of participants; % = percentage; prehypertension >90th percentile <95th percentile; hypertension >95th percentile.

was made of a one-way analysis of variance to determine significant differences between the groups (normal weight, overweight and obese), and logistic regression was used to determine trends with regards to prevalence of prehypertension and hypertension between the subgroups. Because of the small number of coloured and Indian children that entered the sample, these children were excluded from the analysis of race differences, although their data were considered in the other results.

Results

Table I displays the descriptive statistics of the research group. The table shows that 88.4% of the learners were in the normal weight category, 7.8% into the overweight category and 3.8% into the obese category. The table also shows that a smaller percentage of the boys in comparison with the girls were in the overweight (6.4% compared with 9.3%) and obese (3.3% compared with 4.3%) categories. A smaller percentage of the black learners in comparison with the white learners fell into the overweight (6.0% compared with 13.3%) and obese (2.8% compared with 6.4%) categories.

Table II displays the percentage of learners of the total group, and race and gender separately, that can be classified with prehypertension and hypertension in the various BMI groups. A greater percentage of the research group were in the hypertension group compared with the prehypertension group. It appears that the prevalence of

prehypertension may increase with an increase in BMI. The obese group displayed the highest prevalence of hypertension in comparison with the normal and overweight groups. Boys showed a higher prevalence of prehypertension than the girls (9.8% compared with 6.8%), while the prevalence of hypertension in the boys and the girls was similar (24.8% compared with 24.9%). The prevalence of prehypertension was similar (8.7% compared with 8.3%), in the white and the black children, while black children displayed a higher prevalence of hypertension than the white children (25.9% compared with 21.6%).

Correlation coefficients were used to determine the relationship of systolic and diastolic BP with body composition (BMI, body fat percentage and waist circumference) of the participants. All the correlations were statistically and practically significant. Systolic and diastolic BP had significant ($p < 0.01$) positive correlations with BMI ($r = 0.22$; $r = 0.18$), body fat percentage ($r = 0.17$; $r = 0.16$) and waist circumference ($r = 0.21$; $r = 0.19$), although only with small practical significance ($d\text{-value} > 0.1$). These correlations were further analysed by means of covariance of analysis in Table III where the mean values for the systolic and diastolic BP of the participants were analysed in the group in the 3 different BMI groups and also separately for gender and race. A t -test was used to make comparisons between gender and races and significant differences in this regard. These results are shown in the table with a#.

Table III. Mean BP of Grade 1 learners according to BMI categories

variables	Normal weight (a) (n=721)			overweight (b) (n=64)			obese (c) (n=31)			P for trend
	Mean	SD	95%CI	Mean	SD	95%CI	Mean	SD	95%CI	
Systolic BP (mmHg)										
Total group (n=816)	96.8 ^c	14.0	(13.6;14.5)	99.3 ^c	11.1	(9.9;12.6)	106.1 ^{ab}	15.5	(13.2;18.7)	<0.001
Boys (n=419)	98.0 ^c	14.4	(13.8;15.1)	99.7	7.7	(6.4;9.7)	105.6 ^a	17.6	(14.0;23.5)	0.012
Girls (n=397)	95.4 ^{bc#}	13.5	(12.9;14.2)	99.1 ^{ac}	12.6	(10.9;14.8)	106.6 ^{ab}	13.5	(10.8;17.8)	<0.001
White (n=218)	96.9	14.8	(13.4;16.5)	99.6	9.6	(7.6;13.0)	103.2	13.7	(9.9;22.1)	0.21
Black (n=567)	96.9 ^c	14.0	(13.5;14.5)	99.4	11.7	(10.3;13.6)	106.1 ^a	15.8	(13.1;19.8)	<0.001
Diastolic BP (mmHg)										
Total group (n=816)	64.6 ^c	13.1	(12.7;13.6)	67.0 ^c	11.2	(10.0;12.7)	72.0 ^{ab}	14.8	(12.6;17.9)	<0.001
Boys (n=419)	65.1 ^c	13.6	(13.0;14.2)	65.2	10.0	(8.3;12.5)	71.2 ^a	15.0	(12.0;20.0)	0.047
Girls (n=397)	64.0 ^{bcd}	12.6	(12.1;13.2)	68.0 ^a	11.8	(10.2;13.8)	72.8 ^a	14.8	(11.9;19.5)	<0.001
White (n=218)	63.9	12.6	(11.4;14.1)	63.7	7.6	(6.1;10.3)	69.3	14.0	(10.2;22.6)	0.28
Black (n=567)	64.6 ^c	13.2	(12.7;13.7)	68.2	12.1	(10.6;14.0)	72.8 ^a	15.3	(12.8;19.2)	<0.001

BMI = body mass index; sd = standard deviation; a = normal weight; b = overweight; c = obese; mean with superscript differed significantly on a 5% level; # p-value <0.05 gender and race differences; CI = confidence interval.

Due to the small number of coloured and Indian children in the sample, these race groups were excluded from the analysis of race differences and only white and black children were compared. The systolic and diastolic mean BP values increased in the group as the BMI of the participants increased. The mean systolic and diastolic BP values of the normal weight and overweight children differed significantly from the obese children. Differences between the groups are indicated with superscripts (a, b & c). Boys in the normal weight group had significantly higher systolic BP values than the girls in this group. On the other hand, the girls in the obese group had higher systolic BP values in comparison with the boys in the obese group (not significant) and the girls in the overweight and obese groups also had higher diastolic BP in comparison with the boys in the overweight and obese group (not significant). An analysis of possible race differences showed that there was a tendency for the diastolic BP values of black children to be higher than those of the white children in all 3 of the different BMI groups (not significant).

Discussion

The aim of this study was to determine the prevalence of hypertension in Grade 1 learners, as well as to determine the possible relationship between the BP and body composition of Grade 1 learners in the North West Province of South Africa.

Our results regarding prehypertension in the group of 6 - 7-year-olds indicate a prevalence of 8.5%. This is similar to the findings of Hansen *et al.*,²⁸ who found a prevalence of 3.4% in a group of 3 - 18-year-old American children. With regards hypertension we showed a prevalence of 24.9%, which is a slightly higher than the 22.3% indicated in a study conducted by Steyn *et al.*⁹ more than 10

years ago in South Africa. Research demonstrates that the prevalence of hypertension has increased over the last decade as a result of the increase in overweight and obesity amongst children.⁶ Monyeki *et al.*,¹⁰ who focused on a relatively small group of black children (n=203) from disadvantaged communities, reported a 3.9% prevalence of hypertension in 6 - 7-year-old children. However, none of the 6 - 7-year-old children fell into the overweight category, which could also possibly contribute to the lower prevalence of hypertension that was reported in the study. The 35.5% prevalence of hypertension that was found in the obese group of children coincides with a study by Sorof *et al.*,¹⁷ who reported a 33.0% prevalence of hypertension in obese children (11.8 years old). However, South Africa lacks literature that reflects the prevalence of prehypertension and hypertension in 6 - 7-year-old children which could be used for comparison purposes.

The results further showed that systolic and diastolic BP had a significantly positive correlation with BMI, body fat percentage and waist circumference, although the practical significance was small. These results concur with the study of Monyeki *et al.*¹⁰ on 6 - 13-year-old children in disadvantaged communities. Waist circumference showed a positive and significant correlation with systolic and diastolic BP and coincides with research by Cuestas *et al.*²⁹ on 2 - 9-year-old children. From the above-mentioned results it would appear that waist circumference could be used as a possible risk marker to identify children at risk of possible high BP.

The obese children had significantly higher systolic and diastolic BP compared with the normal weight and overweight children and an increase in BMI was consequently associated with an increase in BP. These results coincide with studies conducted on children that

found the same trends.^{5,18} Morphological and functional changes that probably occurred in these children, such as arterial stiffness and left ventricular hypertrophy,³⁰ carotid arterial wall thickening³¹ and early activation of vascular endothelium and platelets³² could be cited as possible reasons for this. All the changes associated with high BP that are reported in the literature indicate that the arteriosclerotic process already begins during the early childhood years.

However, the results also show that a large percentage (24.7%, n=178) of the normal weight group (n=721) was also classified with hypertension. The high prevalence of hypertension in this group indicates that other factors, excluding body composition, may also play a role in the increased prevalence of hypertension. Possible reasons that could be given for this include unhealthy dietary habits, such as a reduced intake of fruit and vegetables, a diet high in saturated fats and a high intake of salt.³³ These unhealthy dietary habits of high intake of salt often occur in the South African population, seeing that bread is the staple food of large numbers of this population and it contains high levels of sodium chloride. Environmental stressors, such as violence and economic stressors, for example poverty, could possibly also have an influence on hypertension in children.⁵

Boys of the normal weight group had significantly higher systolic BP values than girls in the normal weight group. On the other hand, the girls in the obese group had higher systolic BP values compared with the boys in the obese group, although not statistically significant. Girls in the overweight and obese group also displayed higher mean diastolic BP values compared with boys in the overweight and obese group, although also not statistically significant. These results correspond with research by Aggemang *et al.*³⁴ and Monyeki *et al.*¹⁰ which also found that girls had higher BP than boys. A possible reason could be that girls have a higher percentage of fat than boys, which contributes to a higher prevalence of overweight and obesity and, as a result, they display higher systolic and diastolic BP values.

As far as race differences are concerned, the mean diastolic BP values of the black children were higher than those of white children in all three of the different BMI groups, although not statistically significant. These results correspond with other research studies that also found that black children showed higher diastolic BP values than white children.^{9,35,36} These studies, however, did not analyse the different BMI groups separately. Furthermore, the results also show that the mean systolic BP of the black children was only higher than that of the white children in the obese group, although also not statistically significant. The studies of Dekkers *et al.*³⁶ and Cruz *et al.*³⁵ both show that the systolic BP of black children was higher than that of white children. The different BMI groups, however, were also not analysed separately in these studies. Possible reasons that can be given for this are differences in socio-economic status, genetic, endocrine and environmental factors, as well as cardiac function, diet and stress.³⁷⁻³⁹ Seedat³⁷ further demonstrates that black hypertensive patients are more susceptible to cerebral bleeding and malignant hypertension, which is more inclined to give rise to congestive cardiac failure, while coronary cardiac diseases are less common. In contrast to this, coronary cardiac disease is the most important result of hypertension in the white community. These slight differences, although they can only be viewed as trends, could possibly indicate different causes of hypertension in the different race groups, and this speculation needs further research.

The prevalence of hypertension, as well as prehypertension that was found in this study of 7-year-old children is disturbing, especially

when considering the associated health-related problems. A notable relationship was also found between the BP and body composition in the overall group of children, although this relationship could be mediated by high hypertensive percentages that were also found in the normal weight group.

BP during childhood is significantly associated with BP during adulthood.⁶ Therefore it is important to develop intervention programmes, especially those that are aimed at increasing levels of physical activity that would lead to weight loss in overweight and obese children and thus reduce the risk of hypertension. It is also advised that BP must be monitored from early childhood and that BP readings must be incorporated in the clinical evaluation of children on a routine basis so that possible cardiovascular risk factors can thus be monitored, especially in the case of overweight and obese children. This study, however, also shows that other factors besides body composition could have an effect on the prevalence of hypertension in children and follow-up studies are advised to obtain a better understanding of the influence of these factors. Among others, growth retardation is a possible factor that could have an effect on the increased prevalence of hypertension, especially amongst children of normal weight, as height is taken into consideration in BP percentile tables.

A shortcoming of the study was that, although two BP readings were taken five minutes apart, BP could only be taken once. However, most research studies conducted on children report this limitation. Although everything was also done to set the participants at ease with regard to the nature of the BP reading, a child could have been erroneously classified as hypertensive as a result of anxiety. This study is, however, the beginning of a longitudinal study during which follow-up data will be collected on BP status in 2013 and 2016 and baseline BP will consequently be monitored in this way. It has, moreover, also been reported that health workers often underdiagnose hypertension in children as the values for children are not as precise as those for adults, but have to be recorded from BP percentile tables and these tables are not always available in health care clinics.²⁶ Gender differences were indicated, but could not be analysed thoroughly in the race groups due to the limited numbers of children in the different race groups. In spite of these shortcomings, the study brought valuable information to the fore regarding the current prevalence of hypertension amongst Grade 1 learners in the North West Province of South Africa and the effect of body composition, gender and race on the BP of these children.

Conclusion

High prevalences of hypertension were found in Grade 1 learners in the North West Province of South Africa. Small practical significant associations existed between BP and body composition. Screening for BP should therefore not be neglected in these children, especially within the black communities, where the prevalence of hypertension was higher than in the white children. We recommend that interventions, including physical activity, should be introduced to reduce potential cardiovascular complications and obesity among children. Other factors contributing to high BP amongst children should also be investigated.

References

1. Vasan RS, Larson MG, Leip, et al. Impact of high-normal blood pressure on the risk of cardiovascular disease. *N Engl J Med* 2001;345(18):1291-1297.
2. Ezzati M, Lopez, AD, Rodgers A, Vanderhoorn S, Murray CJ. Comparative risk assessment collaborating group. Selected major risk factors and global and regional burden of disease. *Lancet* 2002;360:1347-1360.

3. Centers for disease control and prevention (CDC). High BP 2010 www.cdc.gov/bloodpressure/facts_statistics.htm (accessed 6 May 2010).
4. Connor M, Rheeder P, Bryer A, et al. The South African stroke risk in general practice study. *S Afr Med J* 2005;95:334-339.
5. Lazarou X, Panagiotakos DB, Matalas AL. Lifestyle factors are determinants of children's blood pressure levels: the CYKIDS study. *J Hum Hypertens* 2009;23(7):456-463.
6. Chiolerio A, Boyet P, Paradis G. Assessing secular trends in blood pressure in children and adolescents. *J Hypertens* 2009;23(6):426-427.
7. Munter P, He J, Cutler JA, Wildman RP, Whelton PK. Trends in blood pressure among children and adolescents, 1999-2000. *JAMA* 2004;291:2107-2113.
8. Whitney EN, Rolfes SR. Understanding nutrition. 12th ed. London: Wadsworth, 2008.
9. Steyn L, De Wet T, Richter L, Cameron N, Levitt NS, Morrell C. Cardiovascular disease risk factors in five-year-old urban South African children - the Birth to Ten study. *S Afr Med J* 2000;90:719-726.
10. Monyeki KD, Kemper HCG, Makgae PJ. The association of fat patterning with blood pressure in rural South African children: the Ellisras Longitudinal Growth and Health Study. *Int J Epidemiol* 2006;35(1):114-120.
11. Barnes VA, Treiber FA, Davis H. Impact of transcendental meditation on cardiovascular function at rest and during acute stress in adolescents with high normal blood pressure. *J Psychosom Res* 2001;51:597-605.
12. Sorof JM, Turner J, Martin DS, et al. Cardiovascular risk factors and sequelae in hypertensive children identified by referral versus school-based screening. *Hypertension* 2004;43:214-218.
13. Chen X, Wang Y. Tracking of blood pressure from childhood to adulthood. A systematic review and meta-regression analysis. *Circulation* 2008;117:3171-3180.
14. Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. Prevalence of high body mass index in US children and adolescents, 2007-2008. *JAMA* 2010;303(3):242-249.
15. Reilly JJ, Methven E, McDowell ZC, et al. Health consequences of obesity: systematic review. *Arch Dis Child* 2003;88(9):748-752.
16. Armstrong MEG, Lambert MI, Sharwood KA, Lambert EV. Obesity and overweight in South African primary school children - the Health of the Nation Study. *S Afr Med J* 2006;96(5):439-444.
17. Sorof JM, Poffenbarger T, Franco K, Bernard L, Portman RJ. Isolated systolic hypertension, obesity, and hyperkinetic hemodynamic states in children. *J Pediatr* 2002;140(6):660-666.
18. Flores-Huerta S, Klünder-Klünder M, Reyes De La Cruz L, Santos JL. Increase in body mass index and waist circumference is associated with high blood pressure in children and adolescents in Mexico City. *Arch Med Res* 2009;40:208-215.
19. Makgae PJ, Monyeki KD, Brit SJ, Kemper HCG, Mashita J. Somatotype and blood pressure of rural South African children aged 6-13 years: Ellisras longitudinal growth and health study. *Ann Hum Biol* 2007;34(2):240-251.
20. Armstrong, MEG, Lambert, MI, Lambert, EV. Secular trends in the prevalence of stunting, overweight and obesity among South African children (1994-2004). *Eur J Clin Nutr* 2011;65:835-840.
21. Marfell-Jones M, Olds T, Stewart A, Carter JEL. International standards for anthropometric assessment. ISAK: Potchefstroom, 2006.
22. Meredith MD, Welk GJ. Fitnessgram: Test administration manual: The Cooper institute for aerobics research. 2nd ed. Champaign IL: Human Kinetics Publishers, 2005.
23. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: International survey. *BMJ* 2000;320:1240-1243.
24. National high blood pressure education program working group (NHBPEP) on high blood pressure in children and adolescents. The fourth report on the diagnosis, evaluation and treatment of high BP in children and adolescents. *Pediatrics* 2004;114(Suppl. 2, 4th Report):555-576.
25. Statsoft. Statistica for Windows. Release 5.5: General conventions & statistics. Tulsa, OK: StatSoft, 2010.
26. Statistics South Africa website www.statssa.gov.za/publicationstats.asp (accessed November 2009).
27. Cohen J. Statistical power analysis for the behavioural sciences. 2nd ed. Hillsdale, NJ: Erlbaum, 1988.
28. Hansen ML, Gunn PW, Kaelber DC. Underdiagnosis of hypertension in children and adolescents. *JAMA* 2007;298:874-879.
29. Cuestas E, Achaval A, Garces N, Larraya C. Waist circumference, dyslipidemia and hypertension in prepubertal children. *Ann Pediatr* 2007;67(1):44-50.
30. Mahmud A, Feely J. Adiponectin and arterial stiffness. *Am J Hypertens* 2005;18:1543-1548.
31. Iannuzzi A, Licenziati MR, Acampora C, et al. Carotid artery wall hypertrophy in children with metabolic syndrome. *J Hum Hypertens* 2008;22:83-88.
32. Meyer AA, Kundt G, Steiner M, Schuff-Werner P, Kienast W. Impaired flow-mediated vasodilation, carotid artery intima-media thickening, and elevated endothelial plasma markers in obese children: the impact of cardiovascular risk factors. *Pediatrics* 2006;117:1560-1567.
33. He FJ, Marrero NM, McGregor GA. Salt and blood pressure in children and adolescents. *J Hum Hypertens* 2008;22:4-11.
34. Agyemang C, Redekop WK, Owusu-Dabo E, Bruijnzeels MA. Blood pressure patterns in rural, semi-urban and urban children in the Ashanti region of Ghana, West Africa. *BMC Public Health* 2005;5:114-120.
35. Cruz ML, Huang TT, Johnson MS, Gower BA, Boran MI. Insulin sensitivity and blood pressure in black and white children. *Hypertension* 2002;40(1):18-22.
36. Dekkers JC, Snieder H, Van Den Oord JCG, Treiber FA. Moderators of blood pressure development from childhood to adulthood: A 10-year longitudinal study. *J Pediatr* 2002;141(6):770-779.
37. Seedat YK. Hypertension in black South Africans. *J Hum Hypertens* 1999;13:97-103.
38. Ferreira I, Van Der Horst K, Wendel-Vos W, Kremers S, Van Lenthe FJ, Brug J. Environmental correlates of physical activity in youth - a review and update. *Obesity Rev* 2007;8(2):129-154.
39. Addo J, Leon DA. Socioeconomic position and hypertension: a study of urban civil servants in Ghana. *J Epidemiol Community Health* 2009;63(8):4

