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| **PURPOSE:** When the long-awaited Korean society for Measurement and Evaluation in Physical Education and Sports Science(KSME) was established in 1998, KSME faced a turning point in its growth. Following the changes in both quality and quantity of the society's researches since its establishment and seeking for future themes is important for the society. **METHODS:** This research analyzed the society's research trend using mainly the Korean Journal of Measurement Evaluation in Physical Education and Sports Science. Then, by examining the physical fitness test, it proposed possible future themes for the KSME. This research also looked into the American Kinesmetrics’ contribution to Kinesiology, its research trend and future researches. **RESULTS:** The KSME's recent researches show refined quality, diversified themes and reinforcements in practical researches. Regarding the themes, the reliability and validity of tests became predominant, sports analysis and physical activity emerged, and interest in measurement and evaluation in school PE was low. Possible research themes in the future are measurement and evaluation in school PE, game analysis and sport big data. The recent interest of the American Kinesmetrics was the cross validation of criterion-referenced physical fitness cut-off score, the validation of the guideline for physical activity, and the relationship between sedentary behavior and health. **CONCLUSIONS:** Possible future research themes of the American Kinesmetrics were the refinement of test methods, the effectiveness of the physical fitness test award system, and the application of the ubiquitous wearable technology. |
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| **Key words:**  reliability, validity, sport analysis, criterion-referenced test, physical activity, sport big data |

In an article published in 1998 to celebrate the establishment of Korean Society For Measurement And Evaluation In Physical Education And Sports Science (KSME), Kang gave his concern that professional measurement theories, statistical methods, and research methods would isolate measurement and evaluation in physical education and thereby lower research mind and argued that experts on measurement and evaluation in physical education should have a wide range of communication by quoting Jung saying ‘research is not monologue, but dialogue’[1,2].

Measurement and evaluation in physical education emphasizes procedural justification of research. It has its own research area of making theories and supports the methodology for general research on physical education. Most theories in the field of measurement and evaluation in physical education come from the field of educational evaluation. When the measurement and evaluation theories in the education field emphasizing cognitive domain were introduced in the field of physical education emphasizing psychomotor domain, it was unavoidable to face a crack in the process of the introduction. At the beginning, the problem was quite serious. Now, luckily, the problem is perceived in detail. Nevertheless, there are still different opinions as to what the definite identification of measurement and evaluation in physical education is, and universities have different contents of the textbooks related to measurement and evaluation in physical education.

Korean measurement and evaluation in physical education has had the basic framework of its development since the KSME was established in 1998. At the beginning of its establishment, the organization had difficulty, for there were not many members majoring in the field. Now, the KSME, though small, continues to develop through its strong internal ………………..

winter workshop, there was intensive discussion about it. In addition, there is an effort to publish the common textbook available in universities. The society generally agrees on the inclusion of various theories of measurement and evaluation, actual measurement, and basic statistics. However, there are some different opinions about the recently emerging issues, such as sports analysis and physical activity test method. In addition, more specifically, there are disputes over how much the educational evaluation theories originating from psychometrics are used and how to set a range of statistics. The second issue is that research topics are intermittent and unsystematic. The research on measurement and evaluation neither focuses on particular topics nor is conducted in multilateral ways. Rather, there is no relation between research topics. Therefore, it is hard to establish a systematic theory of a particular topic. The third issue is a lack of interest in the evaluation of physical education at school which is a main area of physical education evaluation and is practically important. The society was less interested in the evaluation of physical education at school so far. Since the establishment of the society, no joint seminars have been held with society of physical education or groups of school physical education. School is the practical venue where the measurement and evaluation in physical education can be fulfilled. To improve the validity and reliability of the evaluation in physical education, it is required to make joint efforts. The fourth issue is that the society had less official support for diverse physical fitness test systems and failed to express its position on the systems. Domestically, there are a variety of physical fitness test systems, including the national physical fitness test, the student physical fitness test, and the national physical fitness 100. They serve as an important role in researching and realizing physical education.

However, the society had less participation in the systems and less expression of its position. Since the society needs to not only make theories, but actively participate in practical plans, it is necessary to be publicly interested in these systems that draw the public’s attention and lay the foundation for research on physical education.

**A research trend of measurement and evaluation in physical education**

Based on the Journal of KSME that began to be published in 1999, this study analyzed a research trend. Kang [1] analyzed a trend of research on the measurement and evaluation in physical education on the basis of the Korean Journal of Physical Education prior to the publication of the KSME journal. To compare with the research result, this study equally applied the analysis framework of Kang [1]. At that time, there were six research topics: the development of test and the verification of validity and reliability (on the basis of classical test theory and item response theory), measurement topic (criteria development, the development of the estimation formula for physical fitness, body composition, and others, forecast of athletic performance, etc.), evaluation topic, statistical method, research method, and general measurement and evaluation. In this study, sports analysis was added so that seven topics were analyzed. At the time when Kang [1] conducted research, there was no much interest in sports analysis so that forecast of athletic performance was involved in measurement topics. When this study was conducted, there were many studies on sports analysis. For this reason, it was judged that it was appropriate to select sports analysis as an independent topic and add it. Accordingly, there

**Table 1. No. of articles by the topic of measurement & evaluation (1999 to Dec. 2014)**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Topic | ‘99 | ‘00 | ‘01 | ‘02 | ‘03 | ‘04 | ‘05 | ‘06 | ‘07 | ‘08 | ‘09 | ‘10 | ‘11 | ‘12 | ‘13 | ‘14 | % |
| V&R | 5 | 5 | 2 | 5 | 2 | 3 | 4 | 6 | 3 | 5 | 9 | 6 | 7 | 10 | 6 | 7 | 28.8 |
| Measurement | 2 | 3 | 6 | 4 | 4 | 6 | 4 | 4 | 2 | 6 | 3 | 4 | 4 | 3 | 1 | 4 | 20.3 |
| Evaluation | 5 | 1 | 2 | 1 | 2 | 2 |  | 2 | 2 | 4 |  | 3 | 4 |  | 1 | 2 | 10.5 |
| Statistics | 1 | 1 | 1 |  | 1 |  | 3 | 2 |  |  |  | 2 | 1 | 1 | 2 | 2 | 5.8 |
| Research Method |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 | 1 | 1 |  |  | 1 | 2.4 |
| Others | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 1 |  | 4 | 3 | 6 | 6 | 5 | 8 | 4 | 21.3 |
| Sports Analysis |  |  | 3 |  |  |  |  | 1 | 1 | 2 | 2 | 5 | 5 | 4 | 3 | 6 | 10.9 |

is a possibility that the weight of measurement topic was lessened somewhat.

As shown in Table 1, the topic ‘validity and reliability’ had the highest rate of 28.8%, others 21.3%, measurement 20.3%, sports analysis 10.9%, evaluation 10.5%, statistics 10.5%, and research method 2.4%. According to the comparison with the research result of Kang [1], the rate of validity and reliability was higher than that of measurement, and the topic ‘sports analysis’ emerged newly. In other words, in this study, the rate of measurement, which was 42.19% in Kang research [1], was reduced to 20.3%, ranking in the 2nd place. Although the rate of sports analysis was added to the rate of measurement, it was simply 31.2%, a large decrease from 42.19%. The topic ‘validity and reliability’ has the high count constantly over the last 15 years of analysis. In case of ………………………………..

**Conclusion**

Based on the Journal of the KSME founded in 1998, this study analyzed the current research trend of Korean measurement and evaluation in physical education and the future research tasks. In addition, based on the research of Mahar & Rowe [6], the American trend of measurement and evaluation in physical education and its future research tasks were analyzed. As a result, quantitative growth was outstanding overall, topics were diversified, and new topics emerged. Practicability was more emphasized, and the demand for the establishment of the identity was on the rise. More details are summarized as follows: Firstly, Since the KSME was established in 1998, it has achieved quantitative growth and has made efforts for joint research with relevant areas. Nevertheless, there are many problems. The identity of the measurement and evaluation in physical education is still discussed. Research topics draw intermittent and one-off attention. There is less interest in evaluation theories and school physical-education evaluation. There is a lack of common interest in measurement and evaluation systems in the dimension of the KSME.

 Secondly, in terms of research trend, the development of tests and the evaluation of validity and reliability were the most important research topics, and the next most interesting topic was measurement. Particularly, the number of studies on sports analysis was on the rapid rise. Since 2010, research on sports analysis has continuously been developed. For more details by topics, there were more studies on health and athletic performance, whereas there was less research on school physical-education. In terms of the characteristics of study subjects, there was the largest number of studies on physical fitness, followed by studies on physique and on physical activity. In particular, research on physical activity was on the gradual rise.

Thirdly, of physical fitness test systems, the physical fitness test system for students was changed to health-related to physical fitness test after the development of the PAPS, and its applicability to class was increased. The national physical fitness test system included the elderly aged 65 years and more in order to prepare for the ageing population.

Fourthly, in terms of the future research tasks of the Korean measurement and evaluation in physical education, it is necessary to establish its identity, to understand evaluation theories newly, and pay more attention to school physical-education evaluation. Research on sports analysis should be more systemized in terms of direction and method in order to develop how to use sports big data. More efforts need to be made to prevent misuse or abuse of statistics. More in-depth research should be made on evaluation, statistics, and research methods.

Fifthly, The American measurement and evaluation in physical education accomplished such achieve-ments as the development of the physical fitness test of the youth, the development of health-related physical fitness test, the development of criterion-referenced evaluation, and the inclusion of body composition in physical fitness test, the development of physical activity test method, and the development of various statistical techniques.

Sixthly, the institutional changes in the American measurement and evaluation in physical education were the publication of the journal Measurement in Physical Education and Exercise Science and a reduction in the doctoral programs for the measure-ment and evaluation in physical education in graduate schools.

Seventhly, the main research topics in the American measurement and evaluation in physical education include cross-validation of criterion-referenced evalu-ation, physical activity based on physical fitness, the validity of physical activity guidelines, and sedentary lifestyle and health.

Eighthly, the future research tasks in the American measurement and evaluation in physical education include the verification of the effect of the award system for the physical fitness test of the youth, elaboration of measurement methods, elaboration of ubiquitous technique application, education of measurement experts, and paradigm change to team science.

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