Suggestions for a standard clinical practice curriculum and learning objectives for physical therapy education in Korea

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Since 1965, the Korean physical therapist licensing examination has been conducted to foster professional physical therapists. As the responsibilities of a physical therapist include measuring and evaluating patients’ physical function and developing the competence to establish treatment plans and predict the outcomes thereof, the need for a new examination system to help develop these abilities has been pointed out. This idea led to the introduction of case-based items on the examination in 2014, and it is expected that case-based items will replace all 60 existing practice items [1]. It is necessary to formulate a standardized curriculum and learning objectives for clinical practice before developing clinical cases based on clinical practice and case-based items. The present study aimed to suggest a standard clinical practice curriculum and learning objectives for physical therapy education in Korea to facilitate the development of case-based items for the Korean physical therapist licensing examination.

We conducted a survey of the programs of 14 universities and 19 colleges using a questionnaire to collect information about various characteristics of clinical practice from June to September 2016. Raw data were available from Supplement 1. Ten researchers and 12 advisers established a standard clinical practice curriculum and learning objectives by analyzing the collected data using descriptive frequency analysis and discussions using the Developing a Curriculum method. Through this method, it was possible to create an educational program capable of reflecting the tasks and techniques of each job.

Ethical approval
This research was authorized by the Institutional Review Board of Silla University (1041449-201708-HR-008).

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The current status of clinical practice in physical therapy education in Korea
Representatives from 19 colleges and 14 universities answered and returned the questionnaires. The results of the survey are shown in Table 1.

Establishment of a standard clinical practice curriculum
A curriculum was designed that prescribed a period of 16 weeks of clinical practice, including 4 weeks of in-school training. Therefore, there were 640 hours of practice with 40 hours of practical training as suggested by the Korean Accreditation Board of Physical Therapy of the Korean Physical Therapy Association [2]. The 5 most common subjects at the surveyed colleges were measurement and evaluation, physical agency therapy, physical therapy for the musculoskeletal system, physical therapy for the neurological system (including physical therapy for pediatric patients), and physical therapy for the cardiopulmonary system. Additionally, 2 future-oriented subjects, physical therapy for the integumentary system and community-based physical therapy, were added to these major subjects. Each of the subject areas was designated by referring to the National Health Personnel Licensing Examination Board of Korea’s middle category titles for practical items [1] (Table 2).

Establishment of learning objectives in a standard clinical practice curriculum
Based on the 2012 physical therapist job descriptions [3], an analysis of the clinical practice subjects related to the job of a physical therapist was conducted. The learning objectives for each subject were established by referring to a previous study [4] (Table 3).

Since 2014, the Korean physical therapist licensing examination has included 5 subjects covering 25 areas: basic physical therapy (anatomy and physiology, physical factor therapy, and public health), diagnosis and evaluation in physical therapy (principles of diagnostic evaluation, tests and evaluations, clinical decision-making, and physical therapy problem-solving), physical therapy interventions (mus-
Table 1. Duration, subjects, credits, periods, and places of clinical practice in physical therapy education programs, collected from 14 universities and 19 colleges in Korea from June to September 2016

| Contents                                      | College | University |
|-----------------------------------------------|---------|------------|
| Duration, subjects, credits                   | 9.5     | 15         |
| Average duration (wk)                         | 2.0     | 4.6        |
| Average credits (score)                       | 8.4     | 12.4       |
| Period                                        |         |            |
| 1st clinical practice                         | 5       | 3          |
| 1st, 2nd clinical practice                    | 11      | 8          |
| 1st, 2nd, 3rd clinical practice               | 3       | 3          |
| 2nd year, winter vacation                     | 13      |            |
| 2nd year, 2nd semester                        | 1       |            |
| 3rd year, summer vacation                     | 11      | 3          |
| 3rd year, winter vacation                     | 5       |            |
| 3rd year, 1st semester                        | 6       |            |
| 3rd year, 2nd semester                        | 2       | 3          |
| 4th year, summer vacation                     | 4       |            |
| 4th year, 1st semester                        | 12      |            |
| Place                                         |         |            |
| University hospital                           | 19      | 14         |
| General hospital                              | 19      | 13         |
| Hospital                                      | 17      | 7          |
| Clinic                                        | 5       | 2          |
| Welfare center                                | 3       | 2          |
| Public health center                          | 2       |            |
| Nursing hospital                              | 13      | 4          |
| Children’s center                             | 1       | 1          |
| Fitness center                                | 1       | 2          |
| Others                                        | 4       | 3          |

Table 2. Status of the standard clinical practice curriculum of physical therapy education, based on a survey of 14 universities and 19 colleges in Korea from June to September 2016

| Period (wk) | Subject                                      | Category in the Korean physical therapist licensing examination                                                                 | Present implementation at 33 universities/colleges (%) |
|-------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| 1–2         | Measurement & evaluation                     | Muscle testing<br>Range of movement measurements                                                                                 | 81.8                                                  |
| 3–4         | Physical agents in rehabilitation            | Pain relief<br>Neuromuscular stimulation<br>Diathermy<br>Ultraviolet/infrared                                                        | 18.2                                                  |
| 5–8         | Physical therapy for the musculoskeletal system | Soft tissue injuries<br>Skeletal tissue injuries<br>Diseases in the lumbar area<br>Diseases in the vasculature and nerves | 77.8                                                  |
| 9–12        | Physical therapy for the neurological system | Brain injuries and diseases<br>Spinal cord injuries and diseases<br>Peripheral nerve injuries<br>Developmental movement disorders | 77.9                                                  |
| 13–14       | Physical therapy for the cardiopulmonary system | Diseases of the cardiac system<br>Diseases of the pulmonary system                                                                  | 47.8                                                  |
| 15          | Physical therapy for the integumentary system | Burns<br>Lymph                                                                                                                     | 19.2                                                  |
| 16          | Community-based physical therapy (11%)       | Patient education<br>Environmental evaluation                                                                                   | 11.4                                                  |

Clinical practice is useful for students to improve their interpersonal relationship skills with the members of a hospital organization and to cultivate the ability to cope with various situations. The training also helps students establish a specific career plan after graduation and develop the skills required for treating patients. Moreover, it enhances student empowerment, which contributes to more effective decision-making skills and self-efficacy [5].

In physical therapy education, clinical practice is an opportunity to apply theories learned in college in the clinical field and to learn how to apply specific skills. This is an important aspect of the curriculum, as it helps influence how the mindset of a professional physical therapist is established. It is critical for students to cultivate professional skills through clinical practice. Therefore, it is necessary to provide an environment with sufficient practical training to enhance practical skills and a professional mindset [6].

Through clinical practice, which is a crucial process in physical therapy education, students experience learning in various physical therapy fields, practice the basic roles and skills of a physical therapist, and acquire the ability to cope with the changing needs of patients.
Table 3. Learning objectives related to the tasks in job descriptions (units: importance score; maximum of 5 points)

| Measurement and evaluation, physical agent | Physical therapy | Musculoskeletal PT | Neurological PT | Cardiopulmonary PT | Integumentary PT |
|--------------------------------------------|-------------------|-------------------|-----------------|-------------------|-----------------|
| Collecting data                            | 4.18              | 4.18              | 4.18            | 4.18              | 4.18            |
| Medical history                            | 4.18              | 4.18              | 4.18            | 4.18              | 4.18            |
| Muscle testing                             | 4.17              | 4.17              | 4.17            |                   |                 |
| Examination of range of motion             | 4.27              | 4.27              | 4.27            |                   |                 |
| Examination of walking                     | 4.25              | 4.25              |                 |                   |                 |
| Examination of MS                          | 4.03              |                   |                 |                   |                 |
| Examination of NS                          |                   | 3.93              |                 |                   |                 |
| Examination of cardiopulmonary system      |                   |                   | 3.65            |                   | 3.68            |
| Examination of integument system           |                   |                   |                 | 3.92              | 3.92            |
| PT using equipment                         |                   |                   | 3.92            | 3.92              | 3.92            |
| Radio agent therapy                        | 3.95              |                   | 3.92            |                   | 3.92            |
| Hydro agent therapy                        | 3.95              |                   |                 |                   |                 |
| PT for MS                                  |                   |                   |                 |                   | 4.04            |
| PT for NS                                  |                   |                   |                 |                   | 4.07            |
| Therapeutic exercises                      |                   |                   |                 | 4.04              | 4.04            |
| Electro agent therapy                      | 3.95              |                   | 3.95            | 3.95              | 3.95            |
| Adaptive training                          |                   |                   | 3.92            | 3.92              | 3.92            |
| PT for the cardiovascular system           |                   |                   |                 |                   | 4.04            |
| PT for the pulmonary system                |                   |                   |                 |                   | 4.04            |
| PT for the integument                       |                   |                   |                 |                   | 3.95            |

PT, physical therapy; MS, musculoskeletal system; NS, neurological system.

tients [6]. In addition, previous research has proposed a standard curriculum for Korean colleges based on comparative analyses of overseas physical therapy curricula and clinical practice hours, with an emphasis on the necessity of increased clinical practice hours [7].

According to the study of Lee et al. [7] that analyzed the status of Korean physical therapy curricula, students fulfilled the average number of graduation credits specified by the Korea Physical Therapy Association. The study reported that no difference was found in the major curricula despite the fact that the curricula were dualized.

According to the report of Kim and Lee [6], the high-priority challenges that must be addressed to ensure effective clinical practice are as following, in descending order: difficulties in establishing excellent training institutions, the absence of university hospitals that meet the demands of the educational fields and common training programs, educational differences between schools and hospitals, and the absence of clinical practice quality control programs.

Practical programs presenting teaching methods (clinical practicums) between clinical instructors and students have been described in several advanced countries belonging to the World Confederation for Physical Therapy, such as USA, New Zealand, and Australia [7]. A standard curriculum for physical therapy clinical practice is necessary for the qualifying baseline of the licensing examination, so descriptions of acceptable examples of standard curricula among the advanced countries in World Confederation for Physical Therapy must be published, and suggestions should be made regarding the necessary period (hours) for clinical practice.

This study identified the subjects most commonly taught in colleges as standard subjects (musculoskeletal physical therapy, neurological physical therapy, cardiopulmonary physical therapy, and integumentary physical therapy).

The learning objectives of the standard practice curriculum were selected according to the basic job functions of a physical therapist. These functions included disease evaluation and intervention and training, as outlined in the 2012 physical therapist job descriptions.

Limitations

The standard clinical practice curriculum was structured according to the subjective viewpoints of the researchers, based on preceding studies in the Republic of Korea and abroad and on a survey of domestic colleges. Therefore, these suggestions are limited to physical therapy education in the Republic of Korea.

In conclusion, we suggest a standard clinical practice curriculum and learning objectives for physical therapy education in Korea, as presented in Tables 2 and 3. It is also suggested that decisions related to the assignment of case-based items by major field, disease, and other classifications for the Korea Physical Therapy Licensing Examination be made as soon as possible.

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Conceptualization: OTY. Formal analysis: KBJ. Funding acquisition: OTY. Project administration: OTY. Writing—original draft: LKS, KBY. Writing—review & editing: KBJ, LKS.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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Supplementary material

Supplement 1. Data file is available from https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi%3A10.7910%2FDVN%2FL3UIAJ

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