CHAPTER IX

DISCUSSION

This study focused on the professional competence of the new graduates (the graduates who completed within one year). The first hypothesis was about how suitable was the new graduates professional competence compared with the standard competence.

The competence in this study can be separated into two components: the cognitive and affective, and the psychomotor skills. The discussion will be focussed first on all graduates and then on graduates from the three schools. The professional competence was from two sources; self- and supervisor- appraisal.

Professional Competence of All Graduates.

1. Cognitive and affective component.

The professional competence as appraised by the new graduates was classified in the "fairly high level" according to a preset criteria in almost all items as well as in all except two areas: professional ethics and attitude, and personal qualities. The rating of professional competence of these two areas were in the "high level". One of the reasons for "high rating" in these two areas may be because the graduates

overestimated their competence. However, the supervisors also rated the professional competence of the graduates in the "high level" for the two areas (no statistical difference). Therefore, this might indicate that the competence of graduates in these two areas is actually "high" or that the agreement between the supervisors' and the graduates' ratings was due to chance because of the non-existance of a clear operational definitions used for rating.

In all areas, there were consistent agreements between the supervisors and the graduates with respect to the items with highest and lowest scores, except the area of continued education behaviors. There were no statistical significant differences between the competence scores obtained from the supervisors and the graduates in all areas (calculated on items and total score) except "continued education behaviors".

In the area of interpersonal relations and communication skills, the graduates had the highest scores of professional competence in item 2; motivating the patient to be more independent. The lowest score was in item 4; observe the patient's nonverbal communication attentively and then respond appropriately.

In the area of professional ethics and attitude, the graduates had the less professional competence in

item 4; engaging in ongoing professional development. This might be related to the scarcity of the continued education programs nowadays (CE), suggesting that more attention has to be geared towards improvement in this area since technology and knowledge increase as a rapid rate. Graduates have to be in close touch with continuing education to keep up with the changing standards of management in their fields of interests.

In the area of quality supporting to primary health care, item 1, the knowledge of the direction of primary health care; was appraised as the least score of professional competence. The scores were almost classified into the "medium level" of professional competence (4.70 and 4.80 for self- and supervisors'-appraisal respectively). This may be because, there was only one course of P.T. in community medicine (Mahidol University) which was just offered recently. The course of community medicine of Khon Kaen University were judged by the new graduates to have questionable applicability. One reason was that the new graduates did not give the service in the community during their training.

The area of personal qualities was separated into two sub-categories; working relationship and personal attributes. In the working relationship sub-category, the graduates had the least professional competence in writing report for communication (item 4).

The new graduates were more concerned about their perceived incompetence in fostering good working relationship than their supervisors (4.80 and 5.25 for self- and supervisors'- appraisal). Good working relationship requires the appropriate use of a common form to communicate with other health professions. At the moment, the standard forms acceptable by physical therapists for communication with other health professions is not available. In 1987, the seminar for improving the information system in physical therapy (Chiangmai University, Faculty of Associated Medical Science, 1987) was conducted to develop the common forms used in both clinic and administration. However, the forms were not adequately tested and might not be generally accepted by most physical therapists who have their own principles and management concepts. Therefore, it is recommended that the professional association should facilitate the development and subsequent usage of the common forms and should be the focus for their constant revisions according to changing objectives and needs. The schools also should encourage the teachers and students to write report in the same methods and provide the opportunity for the students to use the forms commonly used in the general hospital. The schools should teach the student how to promote their professional knowledge to other professions.

In the personal attributes sub-category, the problem solving and creativity scores were lowest compared to other items in the same area. However, the scores were still quite high. This might reflect the tendency for overrating or insensitive measuring instruments since most item scores in the clinical problem solving area were much lower even though these scores were supposed to measure similar quality (problem solving quality).

In the area of continued education behaviour, there was low agreement between the graduates and their supervisors' ratings of competence. The graduates self-rated the competence in item 5 as nearly the "medium level" (4.64) while the average supervisor rating was 5.1. The difference was significant statistically. This may indicate that the graduates had low confidence in the application of the scientific principles. This competence is important for the graduates to gain and select the rapidly changing knowledge. The schools should be more concerned with upgrading the ability in critical appraisal skills and the basic principles of research.

There were no differences in both statistical analysis of raw scores and classification (level of professional competence) between the professional competence as appraised by the graduates' themselves and

their supervisors' in most areas and even in the area of clinical problem solving skills (as global rating). Therefore, assessment of clinical problem solving skills in future research might rely on data from a single source; either self-appraisal or supervisors appraisal according to the purpose of the study. According to self-appraisal of clinical problem solving skills, the lowest score was in item 6; interpreting the result from the examination accurately. The score was so low that it could be classified in the "medium" level of professional competence (4.70). It was surprising that this competence was less than other competences which, conceptually, could at least be as important such as; refine or strengthen the early hypotheses (item 8), set measurable and realistic goals (item 13). The reason for this observation is still unclear. The graduates had high concern on the interpretation of the data since they have to face the problems in their daily practice and decision making. The schools might have to stress during training that data interpretation is one of the most important process for refining the hypotheses and setting realistic goals.

In the areas or items in which the professional competence were classified as "fairly high" or "high", the schools should maintain these ability in order to maintain the standard of the physical therapy professional practice.

The highest and lowest scores may not require a change in related curriculum if they were classified in the "fairly high" or "high" level of professional competence. In other word, the lowest scores do not mean that the graduates had "low" professional competence if the average scores were still in the "high" level or above. However, the items with the relatively low scores such as those in the "medium" level or lower should be of more concerns. It is important to note that the mean scores of items classified in the "highest" and the "lowest" categories did not differ markedly (both educational and statistical importance).

Since the criteria used in this study was arbitrarily classified on the basis of equal interval of the scores, the clinical and educational importance of this classification has yet to be determined. Moreover, the variations of perceived competence scores were mostly small (see on S.D.). So most professional competence could be classified into "high" and "fairly high" categories. The classification need to be related to the clinical practical outcomes with cut off points differentiating between the acceptable and non-acceptable level of professional competence. However, the agreement was observed between the self- and supervisors'-appraised both on the classification criteria (level of professional competence) and the analysis of raw scores.

So it can be concluded that the professional competence of the new graduates in the cognitive and affective component were in "fairly high" level in most areas and "high" level in the excepted two areas as mentioned above. The "fairly high" and "high" needed to be related to the clinical practice of the new graduates.

It is recommended that the criteria of the scale should be operatively defined in the way which can be referred to the actual clinical performance of the graduates and that the cut-off point of the acceptable standard should be clarified by checking the discriminant validity and criteria validity.

1. Skills component.

The result showed that there were no items or areas in which the new graduates perform without sufficient safety. The agreement of "safety" level of professional competence was also found between the self- and supervisors' (on global rating) appraisal. So it can be concluded that the new graduates who finished in any schools in Thailand can perform the professional practice safely as the society required.

With respect to the item rating, the professional competence was in the "perform safety and frequently accurate" category in almost all items and as well as in all areas. With respect to the global rating, the professional competence was in the same level in all

except one area; planning and treatment of miscellaneous diseases. The professional competence in this area was appraised as "perform safety and often accurate". This may confirm that the new graduates and supervisors' opinion were the same and the interpretation was reliable. The following conclusion will deal with the individual items which were rated as "often accurate".

In the area of evaluative skills, only the professional competence of the procedure in item 3; evaluation of developmental delay, was classified in the "often accurate" level. This procedure is rather difficult. The decision on including this procedure in the curriculum should gain more attention. Since the pediatrics condition was rarely found and its management needed high skills. In the actual practice, physical therapists frequently suggest only the home program to the patient's family. If this standard competence is still required as the "must" do procedure, the professional competence should be increased.

In the area of treatment skills, the procedures which the graduates had the professional competence in the level of "often accurate" were ultraviolet, pool exercise, Hubbard and Whirlpool. The evidences showed that in most general hospitals, these procedures were not available because of high cost. The whirlpool was much more used because it requires a smaller area and has

lower cost. Some physical therapists used this procedure frequently but some did not. If this is required, the Hubbard should be excluded from the competence item. This should also be considered to include in the curriculum and the standard. To solve this problems, the standard may be lowered in the level of "should" instead of the "must" category. The procedure in item 4, facilitation technique, should also be of concern because the score was as low as the classified level of "often accurate" (3.50). This procedure is necessary to perform in patients with neurological conditions. More professional competence is needed.

In the area of planning and treatment of common diseases, many diseases which graduates perceived themselves as having low professional competence were the musculoskeletal diseases. The new graduates only rated their competence in the "often accurate" level of professional competence in the following diseases; thoracic outlet syndrome, deformities of lower limbs, torticollis, and spinal deformities. In Chiangmai, Thoracic outlet syndrome is commonly consulted to physical therapist but no evidence of similar consultation in other provinces. These four diseases should be revised for their suitability to be considered in the "must do" categories. Two diseases which the graduates need more professional competence were

dislocation of joint, spondylolisthesis and spondylolysis (item 3 and 10). The mean score of these two diseases were nearly at the upper limit of "often accurate" level of professional competence (3.54 and 3.56).

In the neurological diseases, encephalitis and meningitis, intracranial and intraspinal abscess, and infantile cerebral palsy were the diseases in which the new graduates had the "often accurate" level of professional competence. The low competence in managing "infantile cerebral palsy" was related to the low competence in evaluation of developmental delay. If this is too difficult to cover all concept in the 4 years of BSc., the appropriate level of professional competence should be more specific and clearly stated.

In miscellaneous diseases, there were no diseases with "often accurate" level of professional competence. However, the mean scores of professional competence of both diseases were nearly classified at the "often accurate" level. Physical therapists had an important role in both diseases but were not frequently consulted.

In conclusion, there were some procedures or diseases which the new graduates could perform with low accuracy. The problem is what the acceptable level of the professional competence is. If the level of "frequently accurate" is acceptable, the procedures and

diseases in which the graduates can only perform with "often accurate" should be of concern. In the procedures and diseases with low professional competence, the schools should pay more attention on increasing the competence of the graduates by any means. If the procedures or diseases are less important, the standard competence may be reduced to the "should do" category.

In this study, the standard competence was derived from the standard job description and checked by only 12 experts in physical therapy. So the standard may not be the standard in itself. The standard is important to both professional association and the schools. The schools need the standard to set the curriculum. The standard may mean nothing if it do not serve the society, the health need, and the profession itself. There are many methods of finding the standard (Norman, 1985). One method as recommended by the expert in health profession educator is the epidemiological finding (Guilbert, 1987). The standard competence should be set more clearly and should be measurable in order to periodically evaluate the graduates and consequently evaluate the standard.

The scale of skill component was also arbitrarily classified based upon the equal intervals of the scores. However, the criteria for each level was more objective than the scale of the cognitive and affective component. The scale indicated two parts of

the clinical practical effectiveness; safety and accuracy. The problem is that the cut off point of the acceptable level of professional competence was not operationally defined. The future study should address this issue.

Professional Competence of the Graduates from Three Schools.

The second hypothesis was set to answer the question whether there was any difference of professional competence among three groups of graduates.

1. **Cognitive and affective component.**

Khon Kaen graduates rated themselves in higher level than other two groups. Mahidol graduates tended to rate themselves the lowest of all groups. The professional competence of Khon Kaen graduates as self-appraised was classified as "high" level in most items and in most areas. In contrast, Mahidol and Chiangmai graduates' professional competence were classified as "fairly high" level in most items and in most areas.

The professional competence by supervisors' opinion did not differ among the three groups of graduates, a finding which was not in agreement with the data from self-appraisal. The three groups of graduates' professional competence rated by the supervisors were in

the same classification of "fairly high" level in most items and in three areas; continued education behaviors, quality supporting to primary health care, and clinical problem solving (as global rating). The professional competence of three groups of graduates in the remaining areas were appraised in the same classification of "high level" in most items.

So it cannot be concluded that the level of professional competence of three graduates were differed in reality since the supervisors' opinion differed from the self-appraisal. The statistical test of self-appraised scores showed that, Khon Kaen graduates had higher professional competence than Mahidol in a few items and in all except two areas; continued education behaviors and personal qualities. However, the professional competence of Mahidol graduates in these items were still classified in "fairly high" and "high" levels. So the statistical significant differences might not have any real educational importance and should not be of great concern to the point of curriculum revision. In the supervisors' opinions, Mahidol graduates had lesser professional competence than Chiangmai graduates only in item 3 of the "personal qualities" area. The professional competence of Mahidol graduates were also classified in "high" level.

The interesting point of concerns should be on the competence item which the graduates rated as low. In the area of clinical problem solving skills, the score of professional competence by Mahidol graduates' self-appraisal in item 6 was relatively low, almost to the point of being classified as the "medium" level (4.54). This point should be brought to the attention of Mahidol curriculum committee so that the reasons for the low scores can be adequately assessed and appropriate remedial actions taken, particularly in the items of the ability in interpreting the data from examination.

In the area of continued education behaviors, Chiangmai graduates self-appraised scores in item 5 were quite low (ie, classified as "medium" level). This might mean that they had low confidence in applying the basic principles in continued education activities.

2. Skill component.

The present data showed that Khon Kaen self-appraised scores were higher than the other groups especially Mahidol. Chiangmai rated themselves higher than others in the area of planning and treatment of common musculoskeletal diseases. In the supervisors' opinion, the level of professional competence were almost all the same for the three groups of graduates in all except three areas. In the area of planning and treatment of common musculoskeletal and neurological

diseases, Chiangmai graduates were rated by the supervisors as having higher level of professional competence than the others. In the area of planning and treatment of miscellaneous diseases, Khon Kaen were rated as having lower level of professional competence than the others. The data from the self-and supervisors'-appraisal were not the same.

The statistical test with self-appraisal score showed that Khon Kaen graduates had higher professional competence than Mahidol in many items and in all except one area; planning and treatment of miscellaneous diseases. Chiangmai graduate had higher professional competence than Mahidol in many items in the area of planning and treatment of common musculoskeletal diseases. In contrast, the supervisors' opinion showed no statistical difference of the professional competence among three graduates in all except one area; planning and treatment of common neurological diseases (Chiangmai were higher than others).

These two sources of data showed little agreement on the difference of the professional competence among three groups. In most instances, the professional competence was classified as "perform frequently accurate" which, conceptually, may not need immediate remedial actions. However, the level of professional competence in some procedures and in some

diseases were classified as only "perform with often accurate". This might indicate that the different schools might want to assess whether the "relatively low" performance related to an unsatisfactory "competence level" and whether remedial action is required. These may be the useful data for the schools to begin their enquiry. Therefore, the following findings, based on the self-appraised scores classifying the competence in the "often accurate" category, help highlight the areas that the schools may want to explore.

In the area of evaluative skills, the competence items which were classified as "often accurate" were item 3 for Mahidol graduates and item 3 and 5 for Chiangmai graduates.

In the area of treatment skills, three groups of graduates expressed the same relatively low professional competence in the "ultraviolet" procedures. Mahidol graduates also expressed relatively low professional competence in the facilitation technique, Hubbard and Whirlpool, and pool exercise.

In musculoskeletal diseases, many diseases could be performed in the "often accurate" level by Mahidol graduates (item 1, 3, 6.3, 10, 14 to 16). The diseases which Khon Kaen were in relatively low level were thoracic outlet syndrome and torticollis.

In the area of neurological conditions, Mahidol and Chiangmai had relatively low level of professional competence in treating cerebral palsy.

In the miscellaneous diseases, Mahidol graduates had relatively low level of professional competence in treating both diseases.

Finally, it cannot be concluded that the professional competence of three groups of graduates differed. The reason is, in the cognitive and affective component, Khon Kaen rated themselves at a higher level than others with little confirmation of the rating from the supervisors' opinion. In the skills component, the differences in the pattern of rating were also found. Although the statistical test showed no difference of raw scores between the self- and supervisors' appraisal the patterns of level of professional competence differed. In addition, the sample size of Khon Kaen was too small to draw the conclusion that their professional competence were higher than other. Another factor that may influence the high self-appraised rating of Khon Kaen graduates was the type of hospital which they worked. 50% of Khon Kaen graduates worked in the private hospital. The effect of type of hospital upon the self-appraised professional competence should be explored. In future study, the rating of the supervisors on two or more groups of graduates should be compared with the

rating of the supervisors on a single group. In additions, the levels of competence of the different groups of graduates rated by single supervisors could be compared. In this case, the single supervisors could act as the "standardized" evaluators. This will help shed light on the possible differences of the professional competence between the groups of graduates.

The Relationship between the Educational Factors and the Professional Competence.

1. The relationship between clinical experience and the professional competence in the skill component.

1.1 All graduates. The data showed that clinical experience were closely related with the professional competence. The more experience gained during studying, the higher the professional competence. The "doing" type of experience was much more related to the perceived competence.

In the items in which the graduates had high experience (more than 50% of graduates had done more than 3 times or cases), the professional competence were also high. However the degree of difficulty of different procedures varied. Some easier procedures or diseases required only 1 time or case to produce the ability in the "frequently accurate" category. The items with "medium" level of experience (more than 50% had done at

least one time or case), the professional competence fell in the level of "frequently accurate". The items with "low" level of experience by doing (more than 50% of the graduates had never experienced), the average professional competence were in the "often accurate" level.

The statistical test also showed the capacity of the "doing" experience in predicting the perceived professional competence. The prediction were quite high (up to 47%) in many items especially those with "often accurate" level of professional competence. This mean that in the items with "often accurate" level of professional competence, the graduates need more experience to be higher in competence. So the items with "often accurate" level of professional competence should be emphasized on providing more experience by doing or if by other type of learning experience.

The above findings might be used to guide the number and characteristics of learning experiences required for coping with individual procedures or diseases. Many schools have been recording and counting the cases which the student have experienced during their training. In many instances, the criteria of the number of case required were also set. The curriculum committee in these schools might want to explore whether the existing criteria relate to adequate competence and

whether the notion of perceived competence level should be included as part of the criteria.

In some procedures or diseases, the graduates reported "medium" experience (more than 50% of graduates had done for at least one case) but their perceived professional competence was still relatively low. In these procedures or diseases, the schools might need to scrutinize the individual diseases or procedures carefully and revise the appropriate level of experience required to graduate from the programme. If appropriate experiences needed are more than the number of real clinical situations capable of being provided by the schools, then ways to increase experiences by other means should be explored. These might include audiovisual aids, case simulation and so on. However, if the occurrence of clinical problems has drastically reduced over time (e.g., rehabilitation of poliomyelitis), a revision of specific objectives may be required. It will not be a surprise that a lower requirement might be set for some objectives.

1.2 The graduates from three schools. In most areas, Khon Kaen and Chiangmai graduates reported more experience than Mahidol. As mentioned above that the professional competence were related with the level of experience gained. So this is the evidence suggesting that Khon Kaen and Chiangmai might have higher perceived

ability in some competence items. In evaluative skills and treatment skills, the clinical experience reported by the three groups of graduates were not so markedly different compared with the musculoskeletal and neurological diseases.

As discussed above, the skill component of professional competence were highly related to the reported experience gained. Mahidol graduates reported less exposures to clinical experience in some areas. The reason for this might be that Mahidol University have more students than the other two schools. Therefore, it might be more difficult to provide adequate amount of cases to the students. In addition, Khon Kaen and Chiangmai provided clinical practice outside university where students had a full day exposure to clinical problems compared to only half a day exposure in Mahidol University. The clinical problems encountered might be more than those received during practice inside the school. Nevertheless, more clinical exposures do not necessarily equate with higher quality of education if the clinical experiences are associated with inadequate supervision. So, the strategy of sending the students to places where students could gain more clinical practice might have to be balanced against the ability of clinical instructors to provide students with adequate supervision.

2. The relationship between other educational factors and the professional competence.

Since the sample size in both Khon Kaen and Chiangmai graduates were too small to calculate the regression these two groups were not analysed.

In Mahidol groups, the stepwise multiple regression analysis showed a prediction of some educational factors to the professional competence. In the cognitive and affective component, some educational factors significantly predicted the professional competence in only two areas: ie quality supporting to primary health care, and personal qualities. The relationship between the educational factors and many items in these two areas were reasonable. Two independent variables, the applicability of all clinical practice course, and clinical instructors characteristics, had statistically significant relationship with more items than others. In the skill component, the applicability of all clinical practice course also had statistically significant relationship with more items than other.

The data suggested that clinical experiences might be related to perceived professional competence. Therefore, careful planning for appropriate clinical experiences is important. This should be done systematically, integration both continuity and

appropriate sequence of learning experiences. Evaluation (both formative and summative) has to be an essential component in planning of appropriate clinical experiences. This will be a challenge to the schools involved.

Although the relationships between the educational factors and professional competence were derived only from the perceptions of the new graduates, they might help suggest some important points that the schools might want to consider to improve their programmes. However, definite conclusions cannot be confidently drawn because the data were based mainly on perceptions. Any actions contemplated should be based on more information base from other data sources.

The Relationship Between the Academic Achievement and the Professional Competence.

The result showed statistically significant relationships between the academic achievement and the skill component especially the area of evaluative and treatment skill. "Grade point average of all course" predicted the professional competence in more items than "all clinical practice grade point average". It may be concluded that the academic achievement predicted only the professional competence in professional knowledge. It was surprising that there was no relationship with the

area of clinical problem solving skills; the ability about higher cognition. It may be concluded that the new graduates did not perceive the importance of these skills in processing the knowledge during solving the patient's problems. Another reason is the schools may perceive the importance but have no appropriate instruments to measure this skills. So no scores of clinical problem solving skills were included in the academic achievement scores.

The schools should pay attention more on these skills because of changing contexts of health needs, technologies to solve health problems, as well as the changing demands from the society. To adequately cope with these changing needs through the graduates' lifelong careers, the schools cannot teach only academic facts and theories. The skills to identify problems, evidence searches, and critical appraisal ability should be highlighted in the training period. The appropriate process evaluation (evaluation of thinking process or cognitive processing) should be included in the curriculum.

Comparison Between the New and 1989 Graduates.

1. **All graduates.**

The statistical analysis showed that the 1989 graduates rated their professional competence higher than the new graduates significantly in some items in

three areas; clinical problem solving skill, continued education behaviors, and planning and treatment of musculoskeletal diseases. With respect to supervisors' opinion, there were no statistical significant difference of the professional competence between the 1989 and new graduates in all items and in all areas. It may be that the 1989 graduates perceived that they have higher professional competence because they gained one more year of experience. In other word, they may be more confident in these professional competence. In contrast, the supervisors perceived that the professional competence of both graduates did not changed markedly within one year of experience. This might suggest that there were no real change in competence related to one more year of practice or that the supervisors did not have an adequate instrument to assess the abilities of these graduates.

2. The graduates from three schools.

2.1 Mahidol graduates. The self-appraised professional competence of the 1989 graduates were higher than the new graduates statistically in some items and in all except three areas; personal qualities, planning and treatment of common neurological diseases and miscellaneous diseases. Most items with statistically significant differences were found in three areas; clinical problem solving skills, continued education behaviors, and planning and treatment of common

musculoskeletal diseases.

It was interesting that, in the skill component, the competence items with significant differences between new and 1989 graduates were rated at the "often accurate" and the "frequently accurate" level by the new graduates and the 1989 graduates respectively. Thus, the 1989 graduates tended to rate their competence level higher than the new graduates. In addition, in the cognitive and affective component, the items with significant differences which were rated by the new graduates having the "lowest score" and classified in "medium" level of professional competence were also rated in higher scores by the 1989 graduates.

In contrast, the professional competence of the 1989 graduates according to the supervisors' opinions was less than the new graduates in only one area; planning and treatment of common neurological diseases.

It may be concluded that the graduates perceive that they were more confidence when they gain more year of practice especially in the competence about clinical problem solving skills, continued education behaviors and management of the common musculoskeletal diseases. In the actual practice, the supervisors perceived that one more year of experience did not increase the professional competence markedly in most areas.

2.2 Khon Kaen graduates. With respect to the self-appraisal, the professional competence of the new graduates were higher than the 1989 graduates with statistical significant differences in some items and in all except four areas; professional ethics and attitude, continued education behaviors, personal qualities, and planning and treatment of miscellaneous diseases. Most items with statistically significant differences were found in the area of evaluative and treatment skills. Most of these procedures were the basic physical therapy procedures which were easy to perform.

In contrast, the professional competence according to the supervisors' opinions of the 1989 graduates were higher than the new graduates with statistically significant differences in only one area; planning and treatment of miscellaneous diseases.

It may be concluded that the new graduates perceived that they were more confident in performing the physical therapy procedures than the 1989 graduates. In contrast, the supervisors appraised that both graduates had no differences of professional competence. The first reason is the new graduates had just completed from the school. Therefore, they were confident in performing the basic and not complex physical therapy procedures. Another reason is the new graduates had higher estimation on the professional competence scores. The type of

hospital may be one of the factor effecting this higher estimation. The baseline data showed that most of the new graduates were working in the private hospital (50%), in contrast, most of the 1989 graduates were working in the government hospital (81.8%). The graduates who were working in the government hospital tended to rate themselves lower than the ones who were working in the private hospital.

2.3 Chiangmai graduates. Both self- and supervisor- appraisal were in agreement with respect to the non-significant difference of the professional competence between the new and 1989 graduates. It may be that the sample sizes in both groups were very small for the conclusion of difference of the professional competence between the new and 1989 graduates.

It may be concluded that the graduates themselves perceived that the experience gained in one year tended to cause the graduates to be more confident in management of the patient especially in the musculoskeletal diseases. The increment of the actual professional competence is still questionable because the finding was inconsistent with the supervisors' opinion. The new graduates tended to perceive themselves as having a higher professional competence in the basic and incomplex technical skills because they had just been packed with theoretical knowledge and practical skills

from the schools. Future studies should concentrate on comparing the perceptions from the single supervisors who rated the graduates from three schools. In addition, a more qualitative research techniques might be brought in to assess the concordance between the perceived professional competence with real competence. This may be done by using in-depth interview, case analysis and participant observations.