

# Does the Thai Orthopaedic Resident Perform a Good Reserarch?

## A Program Evaluation of Teaching and Training

Weerachai Kosuwon, M.D., Sukit Saengnipanthkul, M.D., and Polasak Jeeravipoolvarn, M.D.

*Orthopaedic department, Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand*

### ABSTRACT

Sixty-eight papers were submitted for the examination of the Thai Board of Orthopaedic surgery in the year 1993 and 1994. All papers were randomly selected to examine by the two independent examiners who do not know the name of the resident, the institute of the resident and the year which the papers were submitted. There were thirty-three and thirty-five of papers submitted in the years 1993 and 1994 respectively. The sample selection of the resident's research in the year 1994 (26 papers of 35 papers) was described in more detail than those in the year 1993 (16 papers of 33) ( $p < 0.05$ ). Statistic was used more in the resident's research in the year 1994 compared with the research of the resident in the year 1993 ( $p < 0.05$ ). The used of statistical methods and calculation techniques of the resident- research in the year 1994 are more appropriate and correct than the research of the resident in the year 1993 ( $p < 0.01$  and  $p < 0.005$ ). The justification of the conclusion of the resident's researches in the year 1994 are better than those researches in the year 1993. The chi-square for linear trend show that the improvement of the resident performance in doing the research from the year 1993 to 1994 (Chi-square 4.407,  $P < 0.035$ ). The over all agreements of the two examiners were 0.82 ( $P < 0.05$ ).

Research has been a requirement of examination for the Thai board of orthopaedic surgery since 1989. Due to many limitations, the quality of resident's research is low and unacceptable. Most of the researches were descriptive and retrospective studies, or case series, or case report. Since 1991 the short course tranining in research methodology has been started for the senior residents, however, this can not be conducted every year due to the policy of

the president of the association. Due to the lack of continuity of triaining, the younger residents have no opportunity to know the research methodology. In many programs of training, the evaluation of the program is essential, therefore, this study is to evaluate the performance of the residents in the year 1993 who did not have an opportunity to learn the research methodology compared with those of residents in the year 1994 who have been taught about the research methodology.

### MATERIALS AND METHODS

Sixty-eight papers were submitted for the examination of the Thai Board of Orthopaedic surgery in the year 1993 and 1994. All papers were randomly selected to examine by the two independent examiners who do not know the name of the resident, the institute of the resident and the year which the papers were submitted. The papers of Khon Kaen Orthopaedic residents were excluded. The evaluation formed is included the methodology such as research question, population and sample, outcome measurement, and statistical analysis of the data. The agreement of two examiners were calculated by using Kappa Statistic. Chi-square, and Chi-square for linear trend were applied.

### RESULTS

There were thirty-three and thirty-five of papers submitted in the years 1993 and 1994 respectively. Over all results of the quality of the resident's research were presented in the table I. The sample selection of the resident's research in the year 1994 (26 papers of 35 papers) was described in more detail than those in the year 1993 (16 papers of 33) ( $p < 0.05$ ). Obviously the statistic was used more in the resident's research in the year 1994

compared with the research of the resident in the year 1993 ( $p < 0.05$ ). The used of statistical methods and calculation techniques of the resident's research in the year 1994 are more appropriate and correct than the research of the resident in the year 1993 ( $p < 0.01$  and  $p < 0.005$ ). The justification of the conclusion of the resident's researches in the year 1994 are better than those researches in the year 1993. The chi-square for linear trend show that the improvement of the resident performance in doing the research form the year 1993 to 1994 (Chi-square 4.407,  $p < 0.035$ ). The over all agreements of the two examiners were 0.82 ( $p < 0.05$ ).

## DISCUSSION

The program evaluation in education should be performed in every aspect. There are many methods of evaluation, we should select the relevant one for our purposes. This study evaluated not only the process of educational program but also the end results of the program. The

systematic evaluation was used in this study<sup>1</sup>. The evaluation started with the research question, population and sample, intervention, clinical outcome, validity and reliability of the outcome measurement, statistical methods, and conclusion<sup>2-6</sup>. The validity of this study is a content Validity<sup>1</sup> and reliability of this evaluation was measured in term of Kappa's statistic. Bias of the evaluation in this study was controlled by using the blinded examiners.

The performance in doing the research of the resident in the year 1994 is better than those residents in the year 1993. If we considered that other factors such knowledge of teaching staff and basic knowledge of the resident in each institute are not different, therefore, this improvement may due to the educational program in the research methodology. We could not do the subgroup analysis for the papers in each institute because of the small sample sizes. Obviously, statistic is one of the hard subjects for the resident, however, the residents in the year 1994 applied this subject more appropriate and correct than the residents in the previous year.

Table I. The evaluation results of the resident's researches in the year 1994 and 1993.

	1994	1993
1. Research questions & aims described	32	29
2. Population defined clearly	31	26
3. Selection of sample described clearly	*26	16
4. Intervention described clearly	34	28
5. Clinical Outcomes defined	27	22
6. Validity & Reliability of the outcome measurement	11	5
7. Statistical analysis required	* 19	13
8. Statistical techniques appropriate used	** 17	7
9. Correction of the statistical analyses	** 17	7
10. Conclusion justified	*** 24	12
Total number of papers	35	33

## REFERENCES

1. Trold H, Spitzer Wo, Mcpeek B. Principles and practice of research 2<sup>nd</sup> ed. New York :Springer-Verlag, 1991.
2. Cohen J.:Editorial "Dota Versus Meaningless Facts" J Bone Joint Surg(Am) 1991;73:959-960.
3. Cowell RH.: Editorial "Hard Deicions from Soft Data". J Bone Joint Surg(Am)1990;72:1441.
4. Laupacis A, Rorabeck HC, Bourne BR, Feeny D, Tugweel P. Randomized trials in orthopaedics: Why, How, and When? J Bone Joint Surg(Am) 1989;71:535-548.
5. Rineberg BA.: Editorial "A Call to Leadership" The role of orthopaedic surgeons in musculoskeletal outcome research. J Bone Joint Surg(Am) 1990;72:1439-1440.
6. Senghas ER.: Editorial "Statistics in The Journal of Bone and Joint Surgery": Suggestions for authors. J Bone Joint Surg(Am) 1992;74:319-320.