



## Constructing the Skill Test and Norm for Badminton Coach

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## Abstract

The purpose of this research was to construct the skill tests and norm for badminton coach which focussed on shuttlecock feeding to train the stroke production. The shape and size of the targets, the positions of the targets were developed by observing the shuttlecock feeding of the coaches, youtube and experts interview. The summarize of the tests were as : 1) the shape of the targets were sector of the circle with 30 inches radius for hand feeding, radius 48 inches for racket feeding and rally feeding. 2) Three types of feeding were test, 3) The spots of feeding targets were four spots for hand feedings ,four spots for racket feeding and two spots for rally feeding. The content validity was .98. Then the test manual, recording forms and targets were developed and tried out with 36 coaches by repeated measurement method. The reliability was .94, the difficulty was .50 and the discrimination was .33 which were acceptable for normal test criteria. The tests were implemented to the 107 badminton coaches with 3 different experience groups by purposive sampling, they were 36 with low experience (less than 1 year), 37 with moderate experience (1-5 years) and 34 with high experience (6 years and more) , most of them was male. The total score of the test were 36.50 as mean and 7.58 as standard deviation. The scores were transformed into T-Score to make the norm of five scales. The very good was 60 and more, the good was 53-59, the moderate was 46-52 ,the poor was 39-45 and the very poor was 38 and lower. For another consideration, we made the norm by raw scores to be convenient to the user. The very good was 45 and more, the good was 39-44, moderate was 33-38, the low was 27-33 and the very low was 26 and lower.

Keywords: Test, Norm, Badminton, Badminton Coach

## Introduction

Badminton was the favorite sport among the youth and people over the world. In Thailand, there are many clubs, educational institutes who provided badminton courts for teaching, training and servicing. Every year some higher education institutes provided the leaning and teaching badminton courses for the students, also Badminton Association of Thailand Badminton Coach's Club and Sport Authority of Thailand provided the training courses for coaches. In the near future, Thailand will have the law to register the people who work as a sport coaches and there will set the organization and staff to evaluate them before giving the occupation license. But there was no any tools to certify them at the present time. On my experience as a coach, teacher, player and training course director in badminton for long time, considered that the ability of the coach was very important to enhance the skill of novice players or students. But there were no any tests and norm to certify them, so we could not guaranty the ability of the coach. In badminton stroke production were categorized into 9 skills (Thanarat Hongchareon, 1992). They are three skills at the front court (drop, yap, defensive lob), three skills at the mid court (serves, drive, return the smash), and three skills at the back court (smash, safe and cut short). The coach must feeding the shuttlecock to train each skills by repeated practice. The precise position, angle and speed of shuttlecock feeding to the exact positions were very important to the repeated practice for students. This was the best and useful methods which used by the teachers or coaches which served along with the principle of teaching motor skills as 'practice make perfect'. So the coaches must be fluency on shuttlecock feeding skills, so the tests and norm of feedings were the tools to ensure badminton coaches' ability. This was the motivation for me to encourage to do this research.

## Methodology

### 1. The construction of target shape, target size, type of feedings, target positions, amount of trials and validity findings

The reviewing of coaching techniques in documents, YouTube, observing the coaching in Training session and interviewing the experts then brought to test by experienced coaches. The results could conclude as:

- a. There were are 3 types of shuttlecock feeding techniques as 1) hand feeding 2) racket feeding 3) rally feeding.
- b. The stroke production practices had 2 types which were 1) stance to hit the shuttlecock and 2) move to hit the shuttlecock. The experts advised to test only the feedings to move to hit because feeding to practice the stance to hit was very easy to perform which every coach can do it perfectly.
- c. The target shape was sector of the circle as it was used in short serve test.
- d. The size of the target should applied short serve test target of Nopporn Tasnaina (2005) which was sector of circle with radius 38 inches. After tried out, the difficulty and discrimination were not meet the criteria, so the experts advised to adjust the size of targets for hand feeding to be 30 inches and for racket feeding and rally feeding to be 48 inches.

- e. The positions of the target were at the front court (to practice drop, yap and defensive lob), at the mid courts (to practice side strokes, drive and return the smash), and at the back court (to practice safe, smash and cut short). The experts advised to set the target as 1) four positions for hand feedings (two at mid court and two at the net), 2) four positions for racket feeding (two at the back corners and two at the short service line corners), 3) two for rally feeding (each corner at the back)
  - f. The amount of trials were the first two for tryout and 20 trials within 60 seconds for test.
2. The validity, reliability, difficulty and discrimination
    - 2.1 The 7 experts on badminton coaching rated with high agree on tests. The validity value was .98.
    - 2.2 The tests were tried out with 36 badminton students of the Faculty of Sport Science, Burapha University. They studied and passed the badminton coaching course in the former year. The repeated measurement was used to find the reliability. The total reliability was .94, the hand feeding reliability was .87, the racket feeding was .91 and the rally feeding was .93. The total difficulty was .50, difficulty of hand feeding was .55, the difficulty of racket feeding was .33 and the difficulty of racket feeding was .27. The total discrimination was .33, the discrimination of hand feeding, racket feeding and rally feeding were the same as .22. (shown in table 1 and table 2)

Table 1 Mean, standard deviation and Reliability index categorized as Test items, Time of test.

number	Tests	Sample	First Test		Second Test		R	Sig.
			$\bar{X}$	SD	$\bar{X}$	SD		
1	Hand feeding	36	13.61	2.51	13.90	2.05	0.87	.001
2	Racket feeding	36	10.14	2.12	11.11	2.45	0.91	.001
3	Rally feeding	36	6.80	3.53	7.27	3.32	0.93	.001
4	Total score	36	30.56	5.77	31.53	6.04	0.94	.001

Table 2 Difficulty index (P) and Discrimination Index (B)

Number	Test	Score		Higher (18)	Lower (18)	P*	B*
		100 %	60%	Passed	Passed		
1	Hand feeding	20	12	12	8	.55	.22
2	Racket feeding	20	12	8	4	.33	.22
3	Rally feeding	20	12	7	11	.27	.22
4	Total score	60	40	12	6	.50	.33

P = Difficulty index B = Discrimination index

3. The sampling and equipment

3.1 The samples were 107 coaches with different experience in badminton coaching selected by purposive sampling technique. They were 36 coaches with low experience (lower than 1 year), 37 coaches with moderate experience (1-5 years) and 34 coaches with high experience (6 years and more).

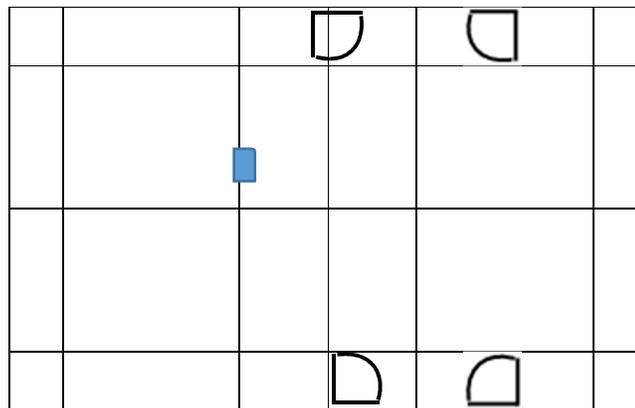
3.2 The tools were the tests, test manual, shuttlecock, stop watch, targets made with vinyl and badminton court.

4. Data collecting and procedure

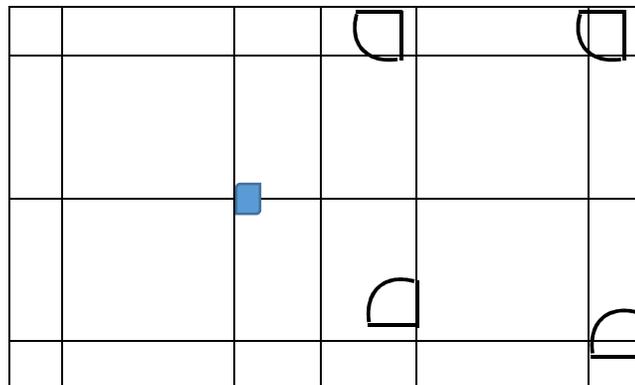
A. Preparation

1. The graduate students were trained to be the testers and assistant testers.
2. The samples were contacted and appointed to the test.
3. The badminton court, targets, shuttlecock, and stopwatch were prepared before testing as picture 1,2 and 3

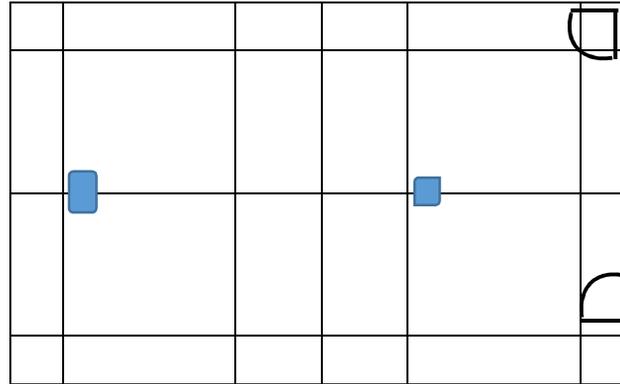
Picture 1 The court and targets preparation for hand feeding test



Picture 2 The court and targets preparation for racket feeding test



Picture 3 The court and targets preparation for rally feeding test



#### B. Samples preparation

1. The samples were notified the objective and procedure of the test.
2. The samples were allowed to warm up and practice before test.
3. The samples were listed into queuing to tests.
4. The sample was called to test as the order of list. Everyone has to do all the test in one round.

#### C. Test procedure For hand feeding

1. The coach stand at the front court opposite to the target court which divided by the net as shown in picture 1.
2. The twenty two shuttlecocks were prepared to feed. The coach who test can hold them any style and any amount as he like.
3. The coach feed the first two shuttlecocks as a try out with no score.
4. After tryout, the tester call "Ready ,Start" and click the stopwatch on.
5. The coach feeds the shuttlecock by hand to the 4 targets (1and 2 at the each side of midcourt targets, 3 and 4 at each side of the under net targets) until finish 20 shuttlecocks within 60 seconds
6. The assistance call "ONE" if the shuttlecock landed in the target or "ZERO" if the shuttlecock land out of target and the tester record the score on the form.

#### D. Test procedure for racket feeding

1. The coach stand at front court opposite to the target court which divided by the net as shown in picture 2.
2. The twenty two shuttlecocks were prepared to feed. The coach who test can hold them any style and any amount as he like.
3. The coach feed the first two shuttlecocks as a try out with no score.
4. After tryout, the tester call "Ready ,Start" and click the stopwatch on.

5. The coach feeds the shuttlecock by racket to the 4 targets (1 and 2 at the each back corners targets, 3 and 4 at each side of the short service line corner targets) until finish 20 shuttlecocks within 60 seconds
6. The assistance call “ONE” if the shuttlecock landed in the target or “ZERO” if the shuttlecock land out of target and the tester record the score on the form.

#### E. Test procedure for the rally feeding

1. The coach stand at the area mark at the back court opposite to the target which divided by the net as shown in picture 3.
2. The assistance stand at the mid court in the same court of the targets.
3. The twenty two shuttlecocks were prepared to feed. The assistance hold the shuttlecock to feed to the coach..
4. The assistance feed with high serve to the coach standing area, the first two was a try out with no score.
5. After tryout, the tester call “Ready ,Start” and click the stopwatch on.
6. The assistance serve the shuttlecock to the coach then the coach must do the over shoulder rally feed them to the targets(1 to left and 2 to right) until finish 20 shuttlecocks within 60 seconds.
7. The assistance call “ONE” if the shuttlecock landed in the target or “ZERO” if the shuttlecock land out of target and the tester record the score on the form.

#### 5. The data analysis

The data was analyzed by descriptive statistics included mean, standard deviation, minimum, maximum, range, T-Score and raw score.

#### The result

##### A. The test scores (shown at table 4)

1. The hand feeding mean was 15.83 and standard deviation was 2.48, minimum was 11.00, maximum was 20.00 and range was 9.00,
2. The racket feeding mean was 11.54 and standard deviation was 3.12, minimum was 3.00, maximum was 17.00 and range was 14.00.
3. The rally feeding mean was 9.30 and standard deviation was 4.21 minimum was 2.00, maximum was 20.00 and range was 18.00.
4. The total mean was 36.49, standard deviation was 7.58, minimum was 22.00, maximum was 54.00 and range was 32.00.

Table 4 The score of the tests defined by tests items and group of coaches.

Descriptive	Hand Feeding(20)	Racket Feeding (20)	Rally Feeding(20)	Total Score (60)
Minimum	11.00	3.00	2.00	22.00
Maximum	20.00	17.00	20.00	54.00
Mean	15.83	11.54	9.30	36.49
Standard deviation	2.48	3.12	4.21	7.58
Range	9.00	14.00	18.00	32.00
Interval	2.00	3.00	4.00	6.00

## B. Constructing the norm by T-score

Transformed the raw score into T-Score and made the norm by divided them in to 5 scales of performance.

The results were as follow

1. Hand feeding :Excellent = 60 and more, Good = 53-59, Moderate = 46-52, Low = 39-45, Very low = 38 and less.
2. Racket feeding : Excellent = 59 and more, Good = 50-58, Moderate = 41-49, Low = 31-40, Very low = 30 and less.
3. Rally feeding : Excellent = 68 and more, Good = 60-67, Moderate = 52-59, Low = 44-51, Very low = 43 and less.
4. Total Score : Excellent = 65 and more, Good = 57-64, Moderate = 49-56, Low = 41-48, Very low = 40 and less.

Table 5 The norm made by T-Score defined by level of performance and feeding types.

Scale	Level	Hand Feeding	Racket Feeding	Rally Feeding	Total Score
5	Excellent	60 and more	59 and more	68 and more	65 and more
4	Good	53-59	50-58	60-67	57-64
3	Moderate	46-52	41-49	52-59	49-56
2	Low	39-45	31-40	44-51	41-48
1	Very low	38 and less	30 and less	43 and less	40 and less

## C. Constructing the norm by raw score

Transformed mean and range of the raw score to be norm by divided them into 5 scales of performance. The results were as follow.

1. Hand feeding : Excellent = 19 and more, Good = 17-18, Moderate = 14-16, Low = 11-13, Very low = 10 and less.

2. Racket feeding : Excellent = 16 and more, Good = 13-15, Moderate = 10-12,  
Low = 7-9, Very low = 6 and less.
3. Rally feeding : Excellent = 16 and more, Good = 12-15, Moderate = 8-11,  
Low =4-7, Very low =3 and less.
4. Total Score : Excellent = 45 and more, Good = 39-44, Moderate =33-38,  
Low = 27-32, Very low = 26 and less.

Table 6 The norm made by raw score defined by feeding types and level of performance

Scale	Level	Hand Feeding	Racket Feeding	Rally Feeding	Total Score
5	Excellent	19and more	16 and more	16 and more	45 and more
4	Good	17-18	13-15	12-15	39-44
3	Moderate	14-16	10-12	8-11	33-38
2	Low	11-13	7- 9	4-7	27-32
1	Very low	10 and less	6 and less	3 and less	26and less

#### Discussion

The tests was acceptable by the criteria on validity, reliability, difficulty and discrimination. The shape and size of the targets were applied from the target used for short serve which familiar to the coaches but I adjust the size to meet the difficulty of the test criteria. The results of the test and norm could not find any former research to compare with, so it need to continue collecting data to make the norm more acceptable. According to the result, the hand feedings could discriminated between the low experience and moderate to high experience because hand feeding was not difficulty to perform, so if anyone knew the technic and practice for a few sessions, he/she can do it well. The hand feedings are very useful for training the novice at the starting phase to learn basic strokes production. The first steps to practice basic stroke was stance and hit. The coach has to feed the shuttlecock with accurate height and angle to the point for student to hit, after they do better, the move and hit will be practiced. The accuracy of feeding was very necessary to the novice because they have to learn in the acquisitive stage of motor learning. The practice on the same pace and position repeatedly will enhance the movement experience and pass to automatic stage. When the players did better basic strokes, the move to hit will be the favorite technics to train. The racket feedings were better to use. The experience coaches used these most of the time they train the moderate and high performance players. When compared the racket feedings performance. The low experience coaches were lower than the high experience coaches, also on the rally feedings the high experience coaches can do better than the moderate and low experience coaches, because they were high skill which need to practice harder and frequently use to possess the skills. The high experience coaches usually use to train their elite players, so they can do better than low and moderate experience coach. Finally I suggest to test just only racket feeding and rally feeding performance.

The strokes production or skills in badminton were 9 skills to practice, If we test all skills will consume a lot of time, This test considered this problem and the experts concluded that the feeding for stance and hit each strokes were easy which the coaches can do them if they know the technic and practice, so the test should combined the movement and hit which were the progressive level of practice. The most movement in badminton were straight movements, side movements and diagonal movements. To save the time of test, this research decided to combine them in one test.

#### Conclusion

The test was acceptable by validity (.98), reliability (.94) difficulty (.50), and discrimination. (.33). It can operate by trained tester with few assistance and few equipment. The norm were reasonable with moderate level of performance to pass 60 % of the test score. The norm transformed with T-Score and raw score were presented. Nevertheless however the more data collecting was need to ensure the norm.

#### Recommendation

- a. Implementation of this research:
  - 1) The users should train the assistance to assist the test procedure, especially on rally feedings, the experience racket feeding assistance is necessary.
  - 2) If there are many coaches waiting to test the one test on each round should be used to prevent the boring of waiting his turn to test.
- b. The next research:
  - 1) To study this test with difference experience on competition of coach because the athletic skills could help the coach on racket feeding and rally feeding.
  - 2) Add the position to test the rally feeding to be 4 targets by use the same as racket feeding.
  - 3) Used this test to collect more data to ensure the norm

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