

Back App - report from Specialists Study 2009-06-30

1 Summary and conclusions

Since 2006 the Back App chair has been on the market as a training apparatus exercising the back supporting muscles during seating. After selling 11000 chairs we sent a questionnaire to specialists (physiotherapists, chiropractors, etc) in the Nordic countries who use Back App.

The company Prognett AS arranged the independent study and received replies from 51% of the specialists (364 answered, 144 from Norway, 104 from Sweden, 60 from Denmark and 56 from Finland).

From the 364 specialists the following conclusions were obtained:

Effect of Back App on the back

98,1% of specialists said that patients with back problems would benefit from sitting on Back App. 97% said that sitting on Back App had positive effects on the function in the lumbar region. The majority indicated that Back App stimulated the muscles "Transversus abdominis" and "Multifides" which play a major role in supporting the lumbar region of the back.

Effects of Back App on the neck

67,3 % of specialists said that neck patients would benefit from training with Back App, and over 62,2 % said that sitting on Back App had positive effects on neck function.

Effects of Back App on the hips

49,5 % of specialists said that patients with hip problems would benefit from training on Back App, and over 39,3 % said that sitting on Back App should give positive effects on hip function.

Effect of Back App on the pelvis

47,3 % of specialists said that patients with problems in the pelvic region would benefit from training on Back App, and over 39 % said that Back App affected pelvic function positively. In addition over 44,8 % said that pelvic muscles were positively affected.

Back App can be recommended

We asked the specialists if they would advise their patients to use Back App?

348 of 364 said "Yes"

The 18 saying no had these reasons: 5 of them had no patients and could of course not advise the Back App to anybody, 6 said they thought it was too expensive, 7 said that they would not recommend the chair because of the need for height adjustable tables and because Back App was not movable (needed wheels)

Comfort

351 of 364 said that Back App seating was comfortable. Comfortable seating is a key factor for continuous use of Back App as a training apparatus.

From this extensive study we can conclude that specialists from Norway, Sweden, Denmark and Finland agree that the Back App chair is doing the job it was planned to do; Back App exercises the back supporting muscles - by sitting

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2 References

1. Rapport fra Specialistundersøkelse 2005
2. Analyses of Back App chair. AnyBody Technology, Aalborg Denmark 2006
3. Rapport fra Brukerundersøkelse 2009

3 Introduction

Back App was evaluated by specialists from Norway and Sweden in 2005 prior to market introduction (Ref. 1). The same questionnaire as used in the 2005 study was sent to physiotherapists, chiropractors, naprapats, ergo therapists and medical doctors in the Nordic countries to get a better understanding of the chair's effect. The study was carried out anonymously.

4 Materials and methods

4.1 Test chairs

Standard models of Back App were tested by the specialists for 2 to 12 months before they answered the questions in the questionnaire. The chairs were similar in every way except for the fabric which was of wool, micro fibre or synthetic leather. The unbalance was adjustable on all chairs.

4.2 Specialists

Specialists; physiotherapists, chiropractors, naprapats, ergo therapists and medical doctors from the Nordic countries tested Back App.

4.3 Prognett AS

The company Prognett AS who sent the questionnaire received answers and reported the results. The study was carried out anonymously

4.4 Questionnaire

Questions
Which stabilizing muscles are affected according to your opinion?
Transversus abdominis
Multifides
Obliquus ext. / int.
Rectus abdominis
Erector spinae
Pelvic muscles
Which functions are positively affected?
Stabilizing lumbal
Stabilizing cervical
Circulation hip joint
Strengthen pelvic function
Circulation fascett joints
Which patients would benefit from training on Back App?
Patients with back problems
Patients with neck problems
Patients with hip problems
Patients with problems in the pelvic region
No patients
Will you advice your patients to use Back App?
Yes
No
If no, why will you not advice them to use the chair?

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Questions
Comments
Are you sitting comfortably on the chair?
Yes
No
Do you have other comments/experiences?
Comments

4.5 Received replies on the questionnaire

380 replies were received, but 16 were excluded because the questionnaire was not 100% filled in. 364 replies were used in this report. 144 of the answers came from Norway, 104 from Sweden, 60 from Denmark and 56 from Finland.

5 Results

5.1 Which stabilizing muscles are affected according to your opinion?

Of the 364 replies 270 said that sitting on Back App affected Transversus abdominis. 253 said that Multifides were affected. 274 mentioned Erector spinae (Table 1)

Table 1. Which stabilizing muscles are affected according to your opinion?

Muscles	Importance for stabilizing the lower back	Number of replies	Replies %
Transversus abdominis	Huge	270	74,2
Multifides	Huge	253	69,5
Obliquus ext. / int.	Some	203	55,8
Rectus abdominis	Some	183	50,3
Erector spinae	Some	274	75,3
Pelvic muscles	Some	163	44,8

5.2 Which functions are positively affected?

Of the 364 replies as many as 353 (97%) concluded that sitting on Back App positively affected the function in lumbar region of the back (low back) (Table 2). 226 (62,1%) said that the function in the cervical region (neck) was positively affected. Approximately 40% said that sitting on Back App positively affected hip functions, functions in the pelvic region and functions of the facet joints.

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Table 2. Which functions are positively affected?

Functions	Explanation	Number of replies	Replies %
Stabilizing lumbal	Low back	353	97,0
Stabilizing cervical	Neck	226	62,1
Circulation hip joint	Hip joints	143	39,3
Strengthen pelvic function	Pelvic muscles	142	39,0
Circulation facet joints	Facet joints (small joints in the vertebral column)	166	45,6

5.3 Which patients would benefit from training on Back App?

98,1 % said that Patients with low back problems would benefit from sitting on Back App (Table 3). 67,3 % said that Patients with neck problems would benefit from sitting on Back App. Close to 50% said that sitting on Back App also would help people with hip problems and problems in the pelvic region

Table 3. Which patients would benefit from training on Back App?

Patients	Number of replies	Replies %
Patients with back problems	357	98,1
Patients with neck problems	245	67,3
Patients with hip problems	180	49,5
Patients with problems in the pelvic region	172	47,3
No patients	3	0,8

5.4 Will you advice your patients to use Back App?

As may as 346 of 364 (95,1%) said that they would advice their patients to sit on Back App

The 18 saying no had these comments:

6 said that Back App was too expensive. They could not advice such an expensive chair

5 said that the did not have patients

4 said that the seat was too big and too soft and that the chair did not have wheels

2 said that the chair needed a height adjustable table

1 had no comment

5.5 Are you sitting comfortably on the chair?

351 said yes and 13 said no

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5.6 Are there any differences between specialists from different countries (Table 4)

5.6.1 Effects on stabilizing muscles

84,6% of the Swedes said that sitting on Back App is affecting Transversus abdominis, but only 58,9% of the specialists from Finland said Transversus abdominis was affected. On the other hand 80,4% of the specialist from Finland said that the multifides were affected. The Swedes had highest score on Obliquus ext. / int., Rectus abdominis and Erector spinae, whilst the specialists from Finland scored highest on pelvic muscles. We have asked about there opinion knowing that effects on some muscles may be difficult to feel for the specialists. Also their might be differences in education in different countries

5.6.2 Function

The specialists agreed that sitting on Back App was stabilizing the function in the lumbar region. As many as 99% of the Swedes said that the lumbar function was positively affected whilst the same figure was 93,3% for the Danes. Specialists from Finland had the highest score on effects on functions in the cervical and pelvic regions

5.6.3 Effects on patients

All the specialists agreed that patients with low back problems would benefit from sitting on Back App. The Swedes had the highest score on neck patients. 1,8 % of the specialists from Finland said that sitting on Back App had no effect

5.6.4 Will you advice your patients to use Back App?

The Swedes were very positive to the effect of Back App, but they were surprisingly reluctant to advice Back App to their patients (Table 4). 90,4% of the Swedes would advise Back App to their customers whilst as many as 97,9% of the Norwegian specialist would advise the chair

5.6.5 Comfortable seating

The specialists agree that the sitting comfort is good

Tabell 4. Replies form Norway, Sweden, Denmark and Finland, %

	Norway	Denmark	Sweden	Finland
Number of specialist	144	60	104	56
Stabilizing muscles				
Transversus abdominis	72,9	73,3	84,6	58,9
Multifides	69,4	63,3	67,3	80,4
Obliquus ext. / int.	56,9	46,7	62,5	50,0
Rectus abdominis	48,6	50,0	56,7	42,9
Erector spinae	73,6	65,0	82,7	76,8
Pelvic muscles	38,2	50,0	40,4	64,3
Functions				
Stabilizing lumbal	97,2	93,3	99,0	96,4

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	Norway	Denmark	Sweden	Finland
Number of specialist	144	60	104	56
Stabilizing cervical	54,9	58,3	67,3	75,0
Strengthen pelvic function	44,4	25,0	41,3	37,5
Circulation hip joint	34,0	41,7	41,3	44,6
Circulation facet joints	43,8	41,7	51,0	44,6
Patients				
Patients with back problems	99,3	96,7	97,1	98,2
Patients with neck problems	58,3	66,7	76,0	75,0
Patients with hip problems	58,3	28,3	54,8	39,3
Patients with problems in the pelvic region	52,8	31,7	47,1	50,0
No patients	0,7	0,0	1,0	1,8
Are you sitting comfortably on the chair?				
Yes	96,5	95,0	97,1	96,4
No	3,5	5,0	2,9	3,6
Will you advice your patients to use Back App?				
Yes	97,9	95,0	90,4	96,4
No	2,1	5,0	9,6	3,6

6 Discussion

6.1 Effects on patients with low back problems

The specialists who had tested the Back App chair agreed that patients with low back problems will benefit from sitting on Back App. As many as 98,1% confirmed the effect. Most of them said that the reason was the positive effect of Back App on the stabilizing muscles "Transversus abdominis" and the "Multifides". These muscles are important for the stability in the lower back (lumbar region) (Table 1). The results agree with the results from the Specialist study spring 2005 (Ref 1). Reference 2 is describing a simulation study on back supporting muscles done by AnyBody AS in Aalborg, Denmark 2006. By screwing the ball on the Back App chair down and this way increasing the movement and the challenge for the person sitting on the chair, they were able to show a positive effect of the activity of the multifides (Figure 1). The conclusions from this study support the opinion from the Specialists on how sitting on Back App activate the back supporting muscles

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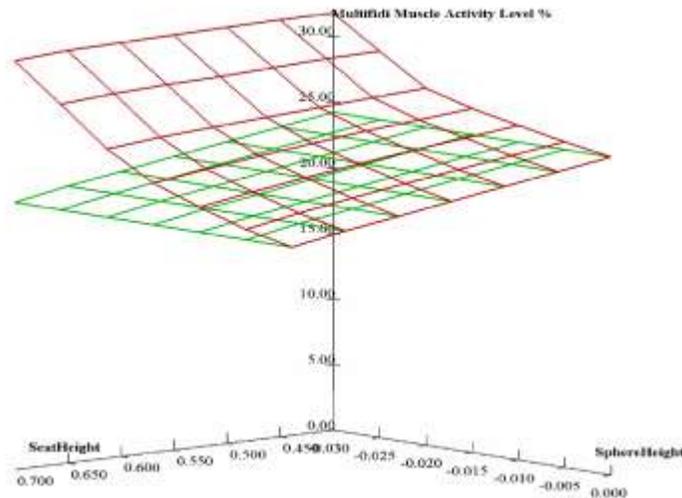


Figure 1. Effects of seat height and height of the ball (sphere height) on multifide muscle activity (Report Anybody 2006-11-02, Ref 2)

Better stability of the back supporting muscles; Transversus abdominis and the Multifides, are important for rehabilitation and prevention of back problems. From literature we know that those muscles can be hurt during longer periods of back pains. Specialists working with rehabilitation of the back try to improve stability and strength of back supporting muscles. They try to increase stability by balance training of back and stomach muscles. Those principles are based on results from newer scientific studies. The training effect of balancing on Back App is positive for healing and prevention of low back problems

It is interesting that about 50% of the specialists said that sitting on Back App may have positive effects on the facet joints (Table 2). Problems in the facet joint can be very painful for people. It is exciting if daily use of Back App can prevent or heal such diseases

6.1.1 Effect on patients with neck problems

As many as 67,3 % of the specialists said that patients with neck problems would benefit from sitting on Back App, and 62,1 % said that Back App would affect the function in the neck region positively (Table 3 and 4). The results are in accordance with results from The Specialist study 2005 where 80% said the same.

Stability in the neck region is a serious problem for many people. Sitting on normal chairs does not give much activity and training in the neck region. Activity will not compensate the effects of gravitational forces. Balance training on Back App is positive for the function in the neck region. To get optimal effect it is important to adjust the imbalance in the chair by screwing on the adjustable ball. This is important because the movements from Back App partly will be neutralized by stabilizing movements in the lumbar region. Although the movements and exercise effect from Back App will only

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partly reach the neck region, over 62% of the specialists asked found this beneficial to the cervical area.

6.1.2 Effects on patients with hip problems

49,5 % of the specialists said that patients with hip problems would benefit from training on Back App, and 39,3 % said that sitting on Back App would affect the function in the hip joints positively

These conclusions are in line with results from The Specialist Study 2005 where 50% concurred. (Ref 1)

It is a surprise that so many specialists say that sitting on Back App can give positive effects for patients with hip problems (Table 3). The positive effect may come from the balance training which improves circulation. In addition, the sitting position; open hip angle with retained lumbar curve” (lordosis) may be positive

6.1.3 Effects on patients with problems in the pelvic region

47,3 % of the specialists said that patients having problems in the pelvic region may benefit from training on Back App, and 39% said that the function in the pelvic region was positively affected. As many as 44,8 % said that the muscles in the pelvic area were affected

In former studies 70% of the specialists said that the muscles in the pelvic area were affected by sitting on Back App (Ref 1). The results are in line with newer studies saying that a correct sitting position is important for the muscles in the pelvic region

6.1.4 Recommendation to patients

346 of the 364 specialists replying on the questionnaire said that they would advice their patients to sit on Back App

In The Specialist study 2005 10 of 15 specialists said that they would recommend Back App to their patients. 5 did not know because the time for testing was limited

That so many specialists say that they will recommend their patients to use Back App proves that the balance training on Back App is in line with the main principles the specialists use to improve stability in the back region

6.1.5 Comfortable seating

351 of 364 said that Back App seating was comfortable. Comfort is a key factor for continuous use of Back App as a training apparatus

7 Literature

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