

# 2010 ABC-one Study Regional Fat Burning

## **IMSB Austria - Austrian Institute for Sports Medicine and Science (IMSB)**

The Institute was founded in 1982 to provide comprehensive medical supervision of Austrian athletics. For the first time, all athletes and trainers in Austria could be medically advised and scientifically observed. The IMSB aspired to improve the quality of the various sports training programs and competitions. Soon after the inception of the IMSB, other scientific and medical programs were added to the Sports Medicine Division – Anthropometry (Body Measurement, Anti-Doping, Nutrition, Physical Therapy and Biomechanics (Exercise Analysis)

## **The First Austrian Olympic Center**

In recognition of the many years that IMSB experts had worked on the planning and development of the Olympic Games, the IMSB Austria was awarded the title of the first 'Austrian Olympic Center' in 1999. Professor Hans Holdhaus – IMSB Director is the adviser to a host of athletes, and has been a sports medicine consultant since the L.A. Olympic Games in 1984.

## **Anthropometry in the Austrian IMSB**

A well-known sector within the IMSB is Anthropometry (Body Measurement).

The Austrian IMSB is one of the leading European institutions in sports Anthropometry. Dozens of international studies (European and Worldwide) have been conducted by this renowned organization, and their findings have been published in leading sports medicine journals.

## **Lead Physician**

Anthropologist Dr. Alena Kos has over 35 years of experience in the field of Anthropometry. She has been a lecturer at the University of Vienna for 17 years.

## **1. Introduction**

The study's goal was to demonstrate the overall effect of "Slim Belly" and "Slim Legs" on regional fat burning, and to assess the effectiveness of both products.

The study was made up of 98 women. The two-stage process was conducted over a 2 week period.

The Group was divided into three subgroups: The first group trained without any equipment (Control Group), the second group trained with "Slim Belly" and the third with "Slim Legs".

Various anthropometric parameters were measured (See "Study Methodology"). Calibermetrics – a scientifically recognized, practical and easy to use BMI tool was adopted to measure the subcutaneous (below the skin) adipose tissue for the study's assessment of regional fat burning.

The group was accommodated in two hotels during the trial period. They were given identical diets and the same exercise regime (30-40 minutes endurance exercise twice a day) to guarantee consistent results.

Table 1: Group Distribution (Mean and Standard Deviation)

	Control Group	Slim Belly	Slim Legs	Total
No. of Participants	34	32	32	98
Age (Years)	51.4 ± 9.3	50.4 ± 12	52.8 ± 8.8	51.5 ± 10
Body Weight (kg)	83.3 ± 11.5	83.5 ± 10.9	84.1 ± 11.2	83.6 ± 11.1

## 2. Methodological Approach

### 2.1. Anthropometric Parameters and Instruments

#### 1. Body Weight (Kilograms)

Measurement Tool: Scale

#### 2. BMI (Centimeters)

Measurement Tool: Stadiometer

#### 3. Skin Fold Thickness (Millimeter)

Measurement Tool: Calipermetrics (Best)

##### Measurement Points - Skin Fold Thickness:

- a) **Waist:** Area between the navel (umbilicus) and front upper iliac spine approximately 5 cm from the top and bottom of the navel
- b) **Hip:** top part of the pelvic region (Crista iliac) to the anterior axillary folds – parallel to the pelvic area
- c) **Central Thigh Area:** front part of the thigh, centered between the upper kneecap (patella) and the edge of the hips

#### 4. Circumferences (Centimeters)

Measurement Tool: Steel Measuring Tape

##### Measurement Points - Circumference:

- a) **Waist Size [cm]**  
Measurement Methodology: Smallest horizontal waist circumference abdomen, or torso at relaxed breathing state
- b) **Hip Size [cm]**  
Measurement Methodology: Largest horizontal circumference of the hips standing upright and feet closed together
- c) **Abs 1 [cm]**  
Measurement Methodology: horizontal area of the abdomen approximately 3 cm above the navel at a normal breathing state
- d) **Abs 2 [cm]**  
Measurement Methodology: horizontal area of the abdomen approximately 3 cm below the navel at a normal breathing state
- e) **Proximal Thigh [cm]**  
Measurement Methodology: Largest horizontal circumference of the thigh (in the furrow "glute" area), uniform weight distribution on both feet and relaxed muscles
- f) **Inside Middle Thigh Area [cm]**  
Horizontal thigh area, centered between the upper kneecap (patella) and the thigh area, uniform weight distribution on both feet and relaxed muscles

### 2.2. Training Sessions

The entire group had two endurance workouts each day between 30 and 40 minutes (aerobic bikes, Nordic walks, hiking). The intensity level was based on pulse rate and age specific criteria.

The Control Group trained without equipment. The other two groups, i.e. Slim Belly and Slim Legs, trained with the patented technology equipment.

### 2.3. Diet and Nutrition

The participants each received three meals per day with a total daily caloric intake averaging 1500 calories.

### 2.4. Statistics

1. Averages
2. Standard Deviation
3. n –Value, T-Test

### 3. Results

#### 3.1. 3.1. Overall Assessment

Body weight was significantly reduced for all groups by an average of 3.2 Kg. All measurable levels, in addition to skin fold thickness, decreased significantly during the monitored trial period (See Table 2). The measured size reductions were between 1.3 and 3.9 centimeter. The skin fold thickness showed reductions between 1.4 and 3.1 mm.

The positive results were explained in part by the dietary changes, in addition to a regular exercise regime. The study's goal was to determine whether the tested equipment had a significant impact on regional fat burning.

**Table 2: Group Results -Total (Mean and Standard Deviation)**

Group Total (n = 98)				
Parameter	1. Measurement	2. Measurement	Difference	T-Test (5%)
Age (Years)	51.5 ± 10.1	51.6 ± 10.1		0
Weight (kg)	83.6 ± 11.1	80.5 ± 10.5	- 3.2	Significance
Height (cm)	165.3 ± 5.8	165.3 ± 5.8		0
Circumference (cm)				
Waist	92.0 ± 10.7	88.1 ± 10.2	- 3.9	Significance
Abdominal 1	100.5 ± 11.4	96.9 ± 10.9	- 3.6	Significance
Abdominal 2	107.6 ± 9.8	104.9 ± 9.8	- 2.7	Significance
Hip	111.1 ± 8.0	108.5 ± 7.8	- 2.6	Significance
Proximal Thigh	64.3 ± 5.4	63.0 ± 5.2	- 1.3	Significance
Inside Middle Thigh Area	57.1 ± 5.4	55.6 ± 5.2	- 1.5	Significance
Skin Fold Thickness(mm)				
Abdominal	40.2 ± 6.8	37.1 ± 6.5	- 3.1	Significance
Hip	30.7 ± 9.1	28.2 ± 8.4	- 2.5	Significance
Inside Middle Thigh Area	38.2 ± 11.4	36.8 ± 10.6	- 1.4	Significance

Table 3 shows that the results have a large variability (range). On one side, none or very minor measurement reductions were observed in certain isolated cases. On the other side, significant decreases in waist sizes (up to 14 mm), and in skin fold thickness (up to 11 cm) were recorded.

**Table 3 Variable Parameter Ranges (Minimum und Maximum)**

Group Total (n = 98)		
Parameter	Minimum	Maximum
Weight (kg)	- 0.8	- 6.0
Circumference (cm)		
Waist	0	- 10.0
Abdominal 1	0	- 11.0
Abdominal 2	0	- 7.5
Hip	- 0.3	- 6.0
Proximal Thigh	0	- 4.5
Inside Middle Thigh Area	0	- 4.1
Skin Fold Thickness(mm)		
Abdominal	0	- 14
Hip	0	- 12
Inside Middle Thigh Area	0	- 8

## 3.2. Gruppenauswertung

### 3.2.1. Group Results

#### 3.2.1. Control Group

For the volunteers who trained without equipment, there were also significant reductions in body weight. There was an average loss of 3.1 kg for this group. The waist size reductions were, however, significantly less. The documented range was between 0.6 and 3.4 cm. The decrease in skin fold thickness only averaged 2.2 mm around the waist area. The two other measured skin fold thickness areas only slightly decreased.

**Table 4: Control Group Results (Mean and Standard Deviation)**

Control Group (n = 34)				
Parameter	1. Measurement	2. Measurement	Difference	T-Test (5%)
Weight (kg)	83.3 ± 11.5	80.3 ± 11.1	- 3.1	Significance
<b>Circumference (cm)</b>				
Waist	89.3 ± 8.3	85.9 ± 7.7	- 3.4	Significance
Abdominal 1	98.3 ± 11.2	95.4 ± 10.1	- 3.0	Significance
Abdominal 2	106.5 ± 9.4	104.4 ± 9.0	- 2.1	Significance
Hip	110.4 ± 8.4	108.3 ± 8.1	- 2.1	Significance
Proximal Thigh	63.3 ± 5.3	62.7 ± 5.1	- 0.6	Significance
Inside Middle Thigh Area	56.4 ± 5.2	55.4 ± 5.0	- 1.0	Significance
<b>Skin Fold Thickness(mm)</b>				
Abdominal	40.2 ± 6.1	38.0 ± 6.0	- 2.2	Significance
Hip	28.3 ± 6.6	27.7 ± 7.0	- 0.5	No Significance
Inside Middle Thigh Area	35.7 ± 9.3	35.3 ± 8.4	- 0.4	No Significance

#### 3.2.2. Slim Belly Group Results

There were also significant waist size reductions documented for the group which used Slim Belly. The average loss was 3.3 kg. The waist sizes showed significant reductions (between 3.4 and 4.4 cm). The skin fold thickness in the waist and hip areas decreased significantly between 4.0 & 4.1 mm (See Table 5).

**Table 5: Slim Belly Group Results (Mean and Standard Deviation)**

Slim Belly (n = 32)				
Parameter	1. Measurement	2. Measurement	Difference	T-Test (5%)
Weight (kg)	83.5 ± 10.9	80.2 ± 10.1	- 3.3	Significance
<b>Circumference (cm)</b>				
Waist	94.8 ± 12.2	90.4 ± 12.0	- 4.4	Significance
Abdominal 1	102.9 ± 11.3	98.5 ± 11.5	- 4.4	Significance
Abdominal 2	108.8 ± 10.3	105.3 ± 10.8	- 3.4	Significance
<b>Skin Fold Thickness(mm)</b>				
Abdominal	40.3 ± 7.7	36.2 ± 7.1	- 4.1	Significance
Hip	33.6 ± 9.6	29.6 ± 8.5	- 4.0	Significance

#### 3.2.3. Slim Legs Group Results

The Slim Legs group had an average weight loss of 3.2 kg. There were significant size reductions in the hip and thigh areas between 2.0 and 3.1 cm. All skin fold thickness measurements showed significant reductions (between 2.5 and 3.1 mm) (See Table 6).

**Table 6: Slim Legs Group Results (Mean and Standard Deviation)**

Slim Legs (n = 32)				
Parameter	1. Measurement	2. Measurement	Difference	T-Test (5%)
Weight (kg)	84.1 ± 11.2	80.9 ± 10.6	- 3.2	Significance
<b>Circumference (cm)</b>				
Hip	111.8 ± 7.8	108.7 ± 7.6	- 3.1	Significance
Proximal Thigh	65.3 ± 5.5	63.3 ± 5.3	- 2.0	Significance
Inside Middle Thigh Area	57.9 ± 5.5	55.8 ± 5.4	- 2.0	Significance
<b>Skin Fold Thickness(mm)</b>				
Hip	30.4 ± 10.3	27.3 ± 9.6	- 3.1	Significance
Inside Middle Thigh Area	40.9 ± 12.8	38.4 ± 12.4	- 2.5	Significance

### 3.3. Group Comparisons

#### 3.3.1. Comparison – Control Group vs. Slim Belly

No significant difference in total weight loss was recorded between the Slim Belly and Control Group. Both groups lost an average of approximately 3 kg. There was, however, a significant difference in waist size measurement 1 and 2, as well as the two measured skin fold thickness areas around the waist and hip area. The Slim Belly group showed a decrease in total waist size averaging 1.4 cm in Measurement 1, while there was an average reduction of 1.3 cm for Measurement 2. The skin fold thickness results jumped from 1.8 mm for the Control Group to 3.5 mm for the Slim Belly group.

**This demonstrated that the overall effect was 8 times greater in the waist area for the Slim Belly user than for those that did not use any equipment.**

There was a waist size reduction of 1 cm for the Slim Belly group using a 5% significance ratio.

**Table 7: Control Group vs. Slim Belly Comparison (Mean and Standard Deviation)**

<b>Control Group vs. Slim Belly Comparison</b>				
<b>Parameter</b>	<b>Difference with Slim Belly</b>	<b>Difference w/o Equipment</b>	<b>Difference</b>	<b>T-Test (5%)</b>
<b>Weight (kg)</b>	<b>(-3.3) ± 1.1</b>	<b>(-3.1) ± 0.9</b>	<b>0.2</b>	<b>No Significance</b>
<b>Circumference (cm)</b>				
<b>Waist</b>	<b>(-4.4) ± 2.1</b>	<b>(-3.4) ± 2.0</b>	<b>1.0</b>	<b>No Significance</b>
<b>Abdominal 1</b>	<b>(-4.4) ± 2.0</b>	<b>(-3.0) ± 2.7</b>	<b>1.4</b>	<b>Significance</b>
<b>Abdominal 2</b>	<b>(-3.4) ± 2.0</b>	<b>(-2.1) ± 2.0</b>	<b>1.3</b>	<b>Significance</b>
<b>Skin Fold Thickness(mm)</b>				
<b>Abdominal</b>	<b>(-4.1) ± 3.7</b>	<b>(-2.2) ± 2.7</b>	<b>1.8</b>	<b>Significance</b>
<b>Hip</b>	<b>(-4.0) ± 2.8</b>	<b>(-0.5) ± 2.0</b>	<b>3.5</b>	<b>Significance</b>

#### 3.3.2. Control Group vs. Slim Legs Comparison

Here again there was no significant difference in total weight loss between the Slim legs and Control Group. Both groups lost an average of approximately 3 kg.

The sizes around the hip and thigh areas (proximal and middle) had decreased significantly compared to the Control Group. For the Slim Legs group, the total hip reduction circumference was an average of 1 cm greater than the Control Group. The average loss around the mid-thigh area jumped to 1.4 cm from 1.1 for the Control Group.

The efficiency of the product was demonstrated also in the significantly greater reduction of both measured skin fold thickness areas (hip and central thigh regions), which averaged between 2.1 and 2.6 mm.

The study showed that the use of Slim Legs produced a 3 times higher volume reduction in the proximal thigh area, and a 6 times greater fat reduction of skin fold thickness in the hip area and in the middle thigh region, as compared to the participants who exercised without equipment.

**Table 8: Control Group vs. Slim Legs Comparison (Mean and Standard Deviation)**

<b>Control Group vs. Slim Legs Comparison</b>				
<b>Parameter</b>	<b>Difference with Slim Belly &amp; Legs</b>	<b>Difference w/o Equipment</b>	<b>Difference</b>	<b>T-Test (5%)</b>
<b>Weight (kg)</b>	<b>(-3.2) ± 1.0</b>	<b>(-3.1) ± 0.9</b>	<b>0.1</b>	<b>No Significance</b>
<b>Circumference (cm)</b>				
<b>Hip</b>	<b>(-3.1) ± 1.1</b>	<b>(-2.1) ± 1.4</b>	<b>1.0</b>	<b>Significance</b>
<b>Proximal Thigh</b>	<b>(-2.0) ± 1.0</b>	<b>(-0.6) ± 1.3</b>	<b>1.4</b>	<b>Significance</b>
<b>Inside Middle Thigh Area</b>	<b>(-2.0) ± 1.0</b>	<b>(-1.0) ± 1.2</b>	<b>1.1</b>	<b>Significance</b>
<b>Skin Fold Thickness(mm)</b>				
<b>Hip</b>	<b>(-3.1) ± 2.9</b>	<b>(-0.5) ± 2.0</b>	<b>2.6</b>	<b>Significance</b>
<b>Inside Middle Thigh Area</b>	<b>(-2.5) ± 2.6</b>	<b>(-0.4) ± 2.9</b>	<b>2.1</b>	<b>Significance</b>

## 4. Conclusion

### 4. Conclusion

The study's goal was to test the overall effectiveness of Slim Belly and Slim Legs ®.

Significantly positive changes could be found in a relatively short time period of two weeks. All measurable parameters (body weight, waist sizes, skin fold thickness) of the total group decreased significantly during the research period (Table 2).

The functional effectiveness could be confirmed in both products:

For Slim Belly ®, a significant reduction of sizes and skin fold thickness was recorded in the stomach and hip areas. The best efficacy of Slim Belly showed where fat reduction was 8 times greater in the waist area than for the Control Group which did not use the equipment.

Training with Slim Legs ® showed significant benefits in the targeted areas – hips and thighs - as compared to the Control Group. Slim Legs ® showed a 3 x greater reduction in the proximal thigh area, and an even greater fat reduction of skin fold thickness in the hip and middle thigh regions, as compared to the Control Group which trained without the equipment.

The effectiveness of regional fat burning was therefore confirmed for both products.

Prof. Hans Holdhaus

Dr. Alena Kos, Anthropologist

Mag. Cathrin Baritsch, Nutrition Specialist  
Petra Kendlbacher, Dipl. MTF

Dezember 2010