



Active antidecubitus furniture



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HUNGARIAN  
GOVERNMENT

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INVESTING IN YOUR FUTURE



## SMARTFORM BY ANFINEO

People with limited mobility due to old age, musculoskeletal or neuropathic illness, and possibly extensive paralysis spend most of their time lying in bed. The supine position carries direct health risks: tissue damage and suppository ulcers can develop very quickly at pressure points, as does the psychological strain, as limited activity also has a negative effect on patients' mental health. They may be less active in social life, uncomfortable watching TV, as well as working. When developing SMARTFORM, we set out to prevent this type of problem and to prevent it from getting worse.

If we can provide the user with a safe sitting for a longer period of time, the amount of time actively spent will increase, thus making both their biological parameters and psychological factors significantly more favorable. By making the upper body and the arm movable and usable, it also becomes suitable for performing the relevant independent tasks.

Achieving a sitting position can be achieved with a seated and reclining piece of furniture that moves the patient on its own at regular intervals using a built-in program, thus avoiding constant strain on certain parts of the body by changing the body position.

SMARTFORM by ANFINEO's innovative seating and reclining positions for seating and reclining furniture are available with automatic control, with the help of a mobile application that allows the user to operate the pre-programmed device. The unique undulating movement of the seat, the possibility of automation, personalization and adjustability also allow users with limited mobility to sit for longer periods of time.



## SITTING POSITION = NEW DIMENSION

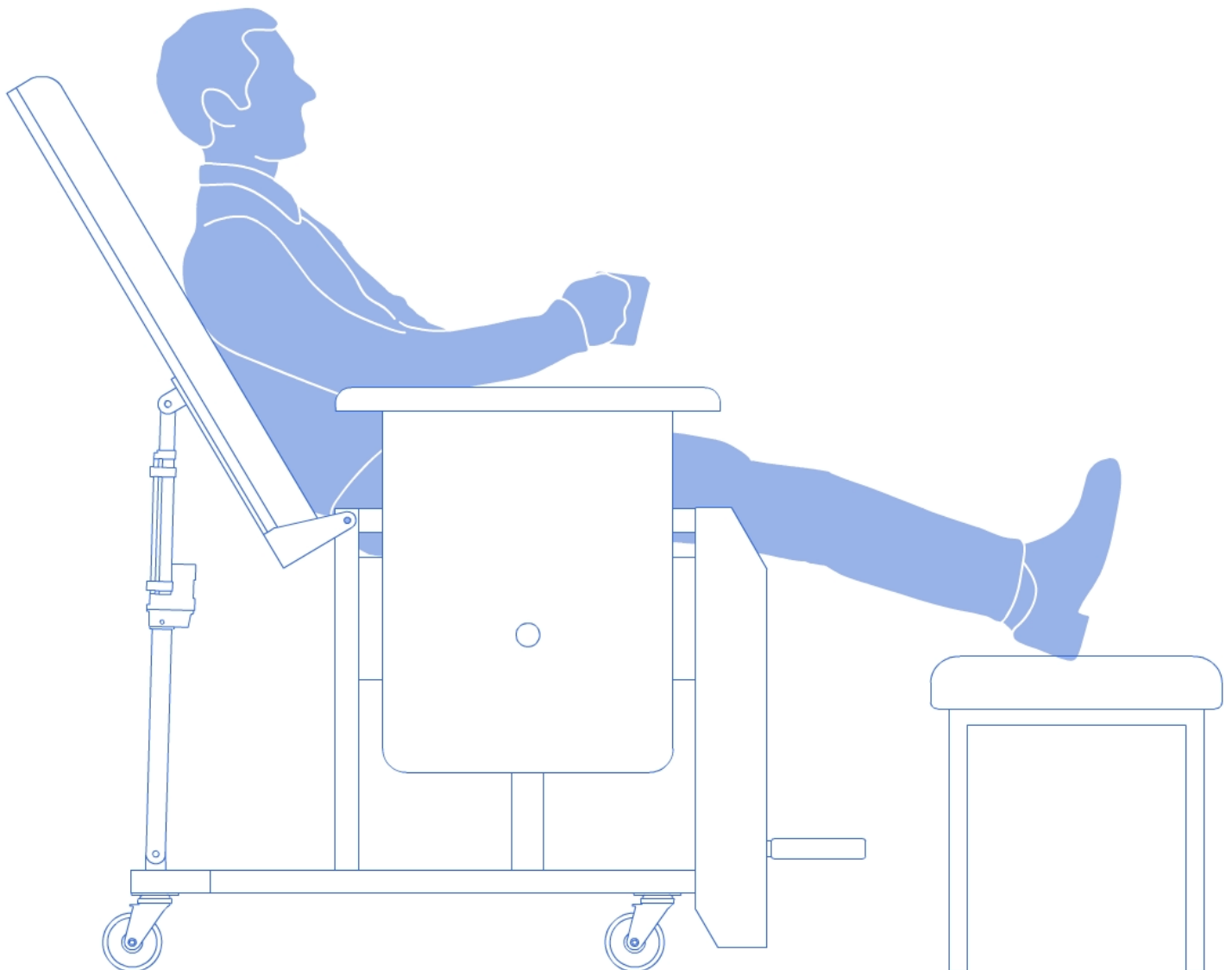
If we can create a sitting position for users with limited mobility for a longer period of time, in addition to the significantly more favorable biological and psychological parameters, new dimensions will open up for them: they can regain their activity and zest for life.

### Biological gain:

- the near vertical posture puts less strain on the circulatory system;
- allows significantly more muscle activity, including both spontaneous and conscious movements.

### Psychic gain:

- the upper body and arm become movable and usable, which allows the person to eat, work or play independently;
- sitting in a chair as opposed to lying in bed induces better visibility and more interaction for both the patient and their environment.







That is why we have developed seating and reclining furniture with a reclining backrest and footrest, which is intended to prevent damage to health, especially lying down, resulting from passive posture. SMARTFORM by ANFINEO is primarily a solution for people with reduced mobility and people who have suffered traumatic injuries and paralysis. The furniture, which has a number of settings and a special, slow-waving, active seating area, allows you to sit for a longer period of time or, thanks to its deckchair-like design, relax in a reclining, close-up position.

## CONSEQUENCES OF THE IMMOBILE LANDING POSITION

We want to prevent this dangerous condition by using SMARTFORM by ANFINEO, which can increase patient activity.

Immobile posture carries direct health risks:

- Tissue damage can develop very quickly at pressure points (bed sores);
- decreased lower extremity muscle work increases the risk of deep vein thrombosis;
- the circulatory system formed in a vertical position is transformed into a horizontal position, which affects the functioning of all internal organs;
- accelerating loss of bone and muscle mass, especially in the muscles of the muscles;
- In the supine position, the lungs are in a difficult position and the exposure of the entire pulmonary system is higher.

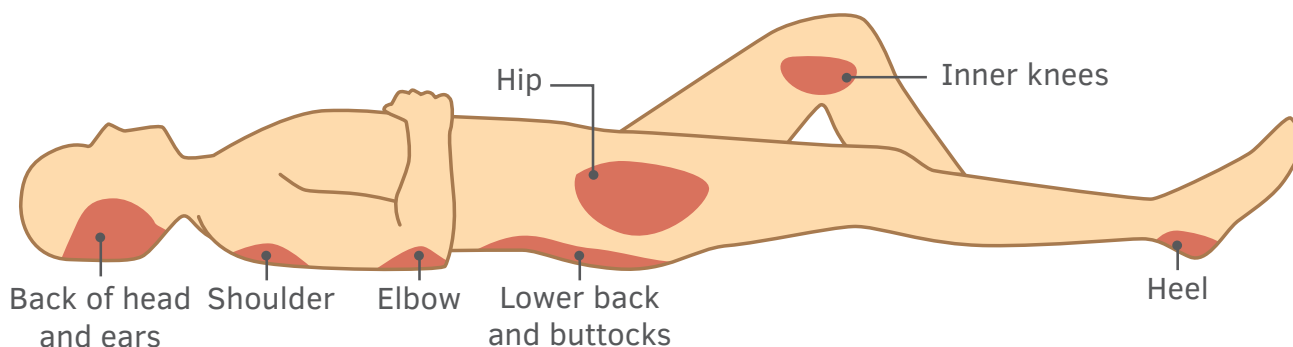
Redness of the skin, skin lesions and, in more severe cases, complete necrosis of the subcutaneous soft tissue up to the bony surface may occur in 5-15% of hospitalized patients but up to 30% of hospitalized patients over the age of 70 years. Poor general health and severe immobility play a role in its development. Bedsore occurs when the patient's inability to change body position, and the parts of the body in contact with the bed are subjected to permanent pressure, resulting in damage or mortification.

Most patients with immobility lie on their backs, so the pressure points on the back surface are most at risk:

- the sacral region;
- the corners;
- the elbows;
- less often the back of the skull.

An already established pressure ulcer clearly means a poorer quality of life for those affected. To avoid bedsore, it is necessary to move the patient several times a day so that the same parts of the body do not always come into contact with the bed.

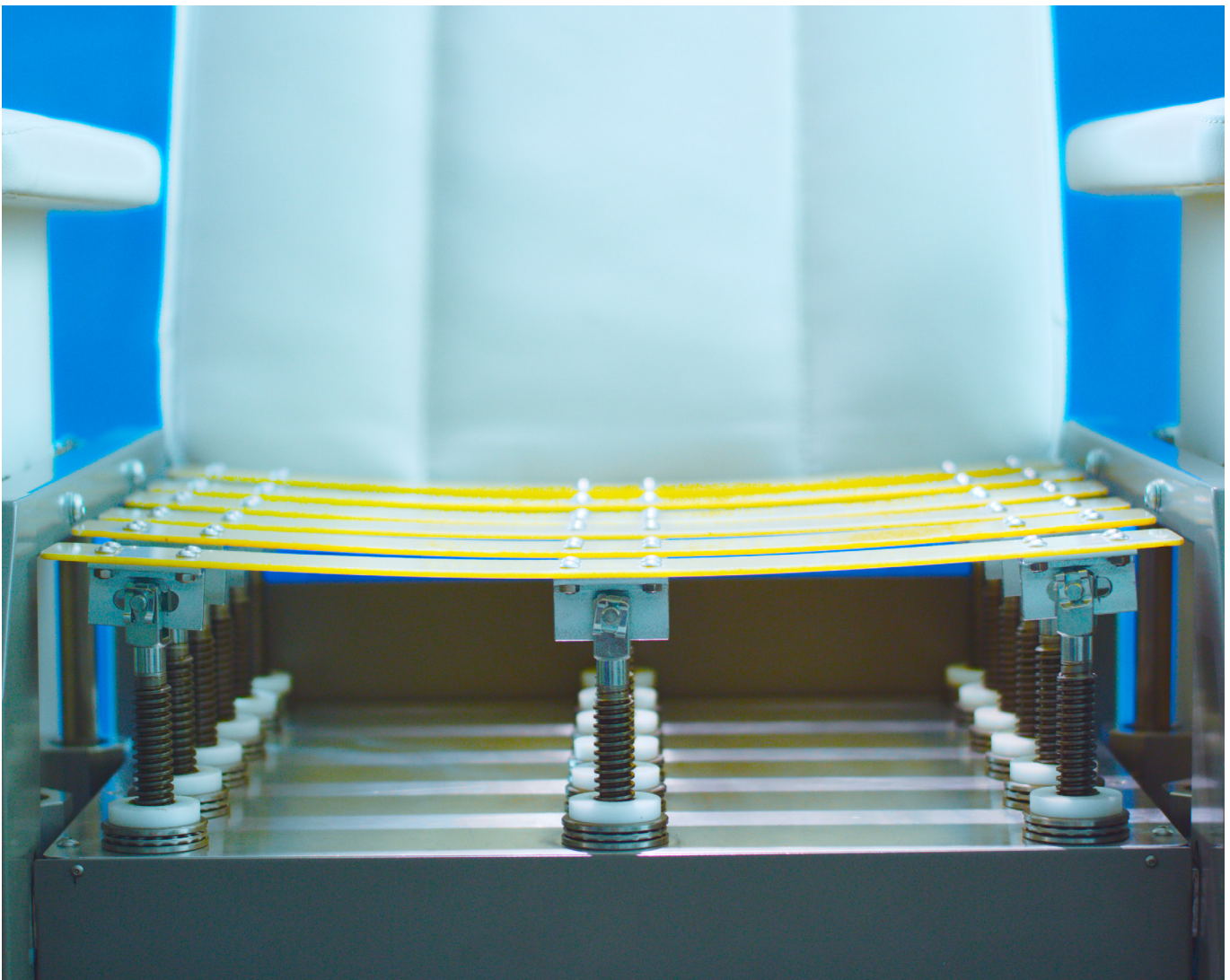
In addition to immobilization syndrome as a disease, a significant psychological aggravating factor is that few activities can be performed without being permanently uncomfortable, i.e. without strenuous head and arm restraints, in bed. The limited activity associated with bed rest therefore affects not only the body but also the mental state of people.



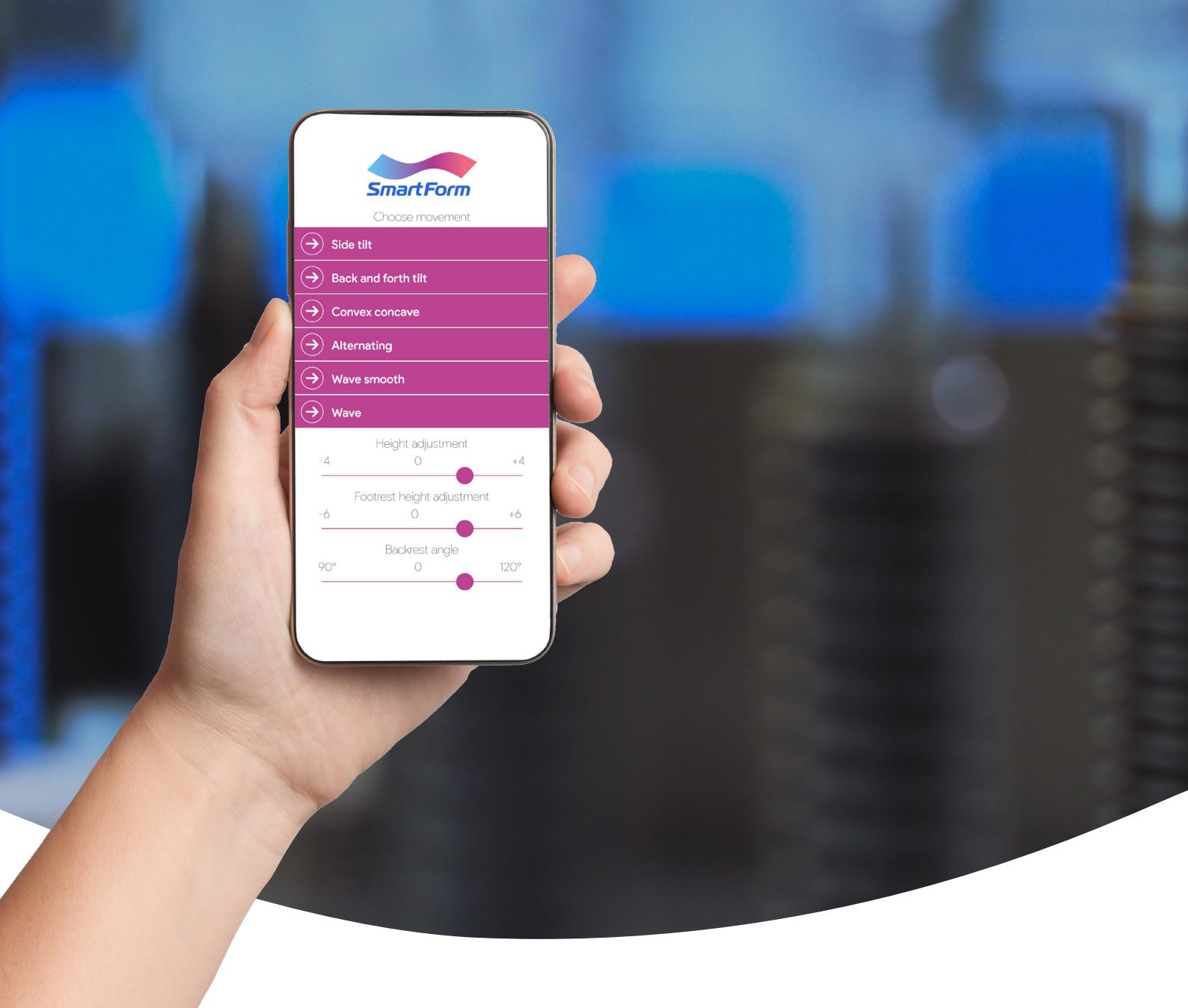
## DESIGN AND OPERATION OF SMARTFORM by ANFINEO

SMARTFORM by ANFINEO focuses on the aspects of rehabilitation and prevention, forming a transition between traditional sitting furniture (dining chair, operating chair, office chair, armchair) and special anti-decubitus beds and mattresses used in clinical and home care. Its uniqueness is that the surface in contact with the body can be tilted in several directions, so it can even swell, which increases the efficiency of the patient's movement.

The central element of the furniture is the mobile seat, which can be controlled by a mobile phone application, the shape of which can be changed intermittently or continuously with pressure rods arranged below the surface in a matrix-like manner. The computer-coordinated movement of the pressure rods allows the points of contact of the body to be changed according to a defined system, thus helping to prevent abutment. The protruding and lowering push rods ensure mechanical movement, their alternation can cause any position. SMARTFORM by ANFINEO can be tilted forwards, backwards, right and left, but the surface can also change to convex and concave shapes. The movement is controlled by a computer program that can be customized. SMARTFORM by ANFINEO has a wealth of unique features, all for the convenience and well-being of the user.







## ACTIVE SITTING

One of the biggest achievements of SMARTFORM by ANFINEO is the seat that can be controlled with a telephone application:

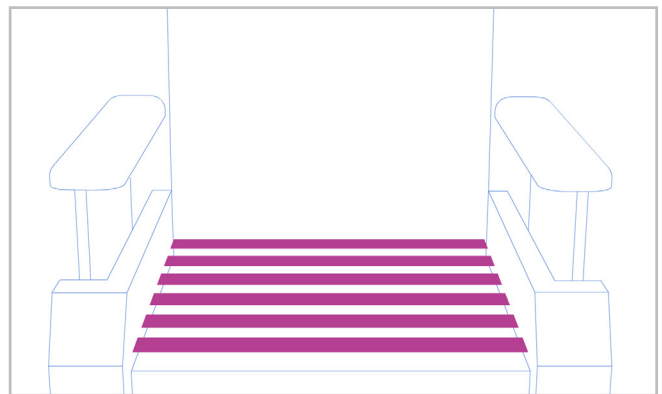
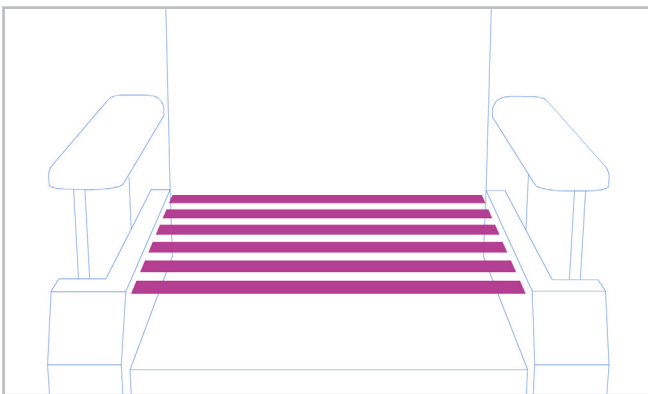
- the pressure rods under the seat cushion can be moved continuously or intermittently;
- with the triple rods, arranged in six rows. The three pressure rods in a row are connected by a highly flexible fiberglass-reinforced plastic slat. This provides support for the seat cushion on a free-form yet large surface area;
- the seat can be tilted in any direction, its shape can be freely formed, it can be a convex, concave or even undulating surface;
- due to the changing shape of the seat, the user is always in contact with the mattress in different areas;
- the movement is unnoticed, slow, so it does not interfere with rest or work, does not cause nausea or malaise;
- the seat can be loaded up to 130 kg.



# TECHNICAL STRUCTURE

## HEIGHT ADJUSTMENT

In addition to moving the mattress, the height of the seat is also adjusted by computer-controlled push rods. During height adjustment, all 18 push rods rise or fall at the same time, resulting in a seat that can be raised or lowered within an 8 cm range.



## TILTING SEAT

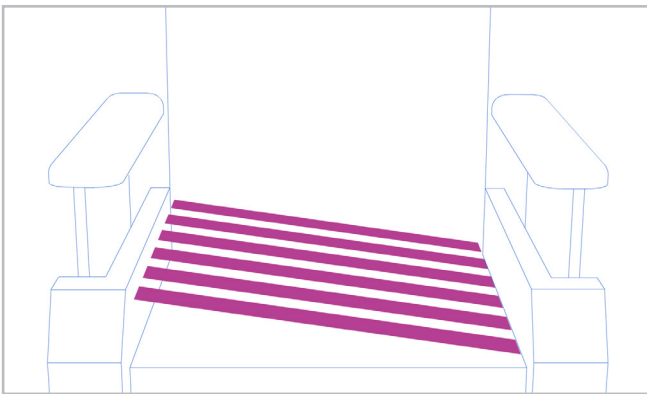
The active seating surface - in addition to the 3-dimensional mobility described earlier - allows the seat to be in a properly tilted position along with the reclining of the backrest.

- The body does not slide forward in a half-lying position;
- adequate support is provided in all positions;
- Maximum tilt of 10 °.

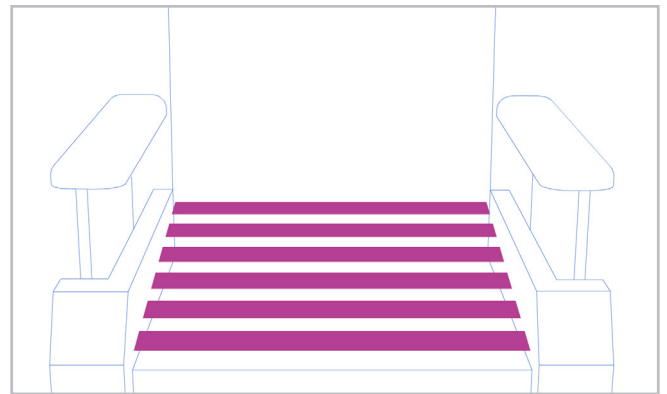
# MOVEMENT PROGRAMS

The movement programs control the occasional repetitive deformation of the specially designed seat:

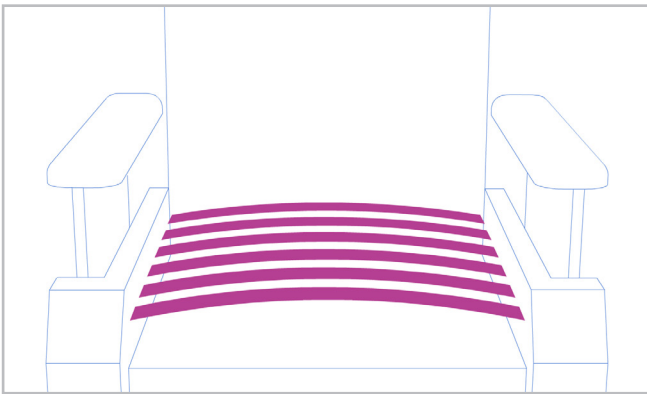
- Lateral tilt: the seat tilts to the right and left alternately.
- Back and forth tilt: the seat tilts back and forth alternately.
- Concave-convex: the seat alternates between concave and convex shapes.
- Alternate rise-descent: every second flexible slat goes up, every intermediate slat goes down, and vice versa.
- Slight undulating motion: a small amplitude of undulating motion travels through the seat.
- Wave motion: A large amplitude of wave motion travels through the seat.



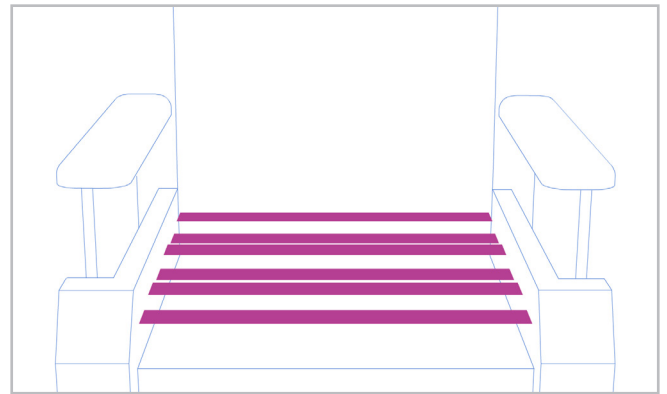
1. Lateral tilt



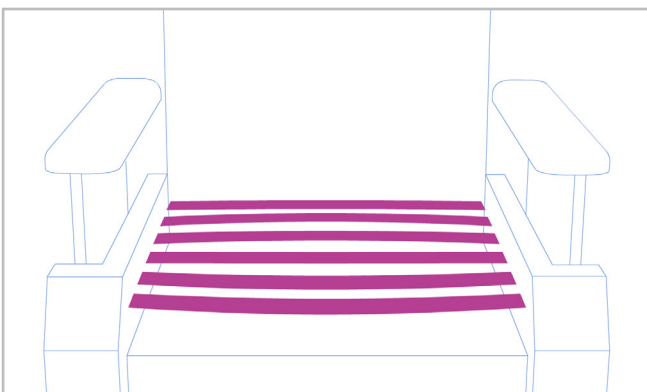
2. Back and forth tilt



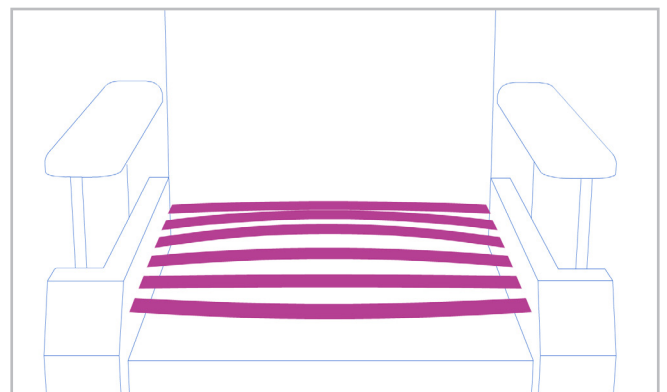
3. Concave-convex



4. Alternate rise-descent



5. Slight undulating motion

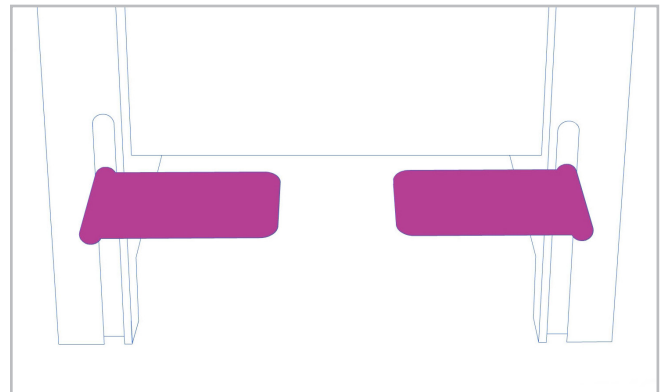
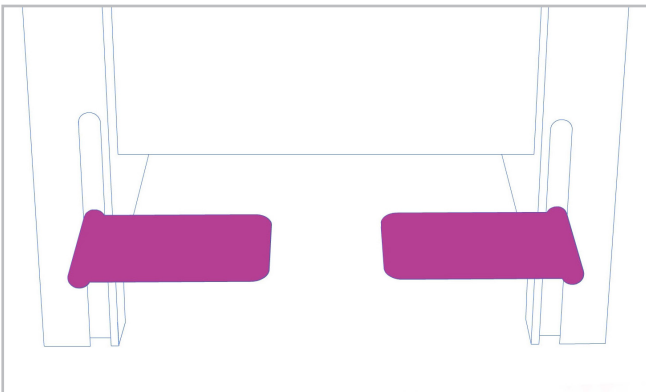


6. Wave motion

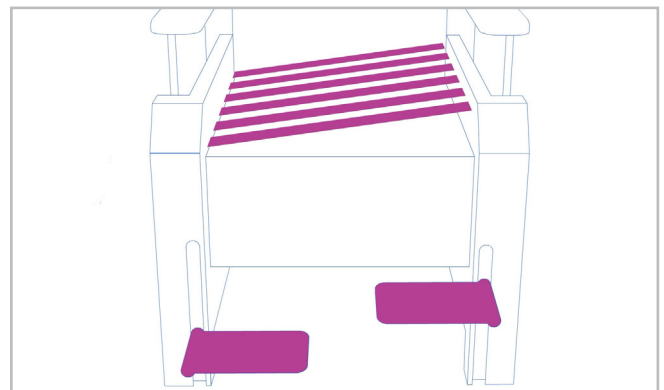
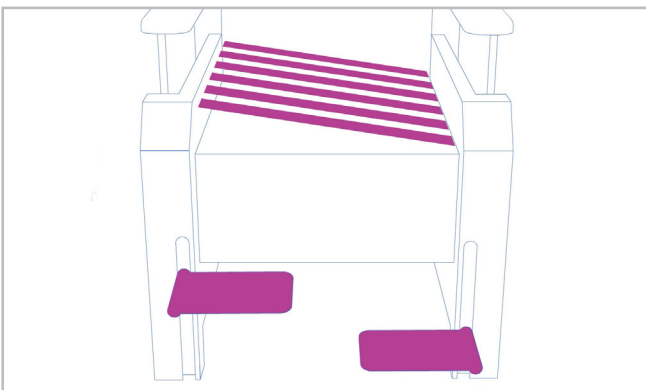
## HEIGHT ADJUSTABLE FOOTRESTS

As the lower leg lengths show a large difference between female and male users, we also considered the customizability of the footrests important. They are also computer-controlled motorized movements.

- height adjustable between 340–460 mm;
- After adjusting the correct height of the footrests, the footrests move in sync with the movement of the seat. The user's feet are thus properly supported in all positions, avoiding numbness caused by „hanging legs” or possible circulatory problems around the thighs.
- We have used folding footrests, which are also used on wheelchairs, which makes sitting much easier.



*Height adjustment of the footrest: between -6 and + 6cm, according to the length of the leg of the user*



*Height adjustment of the footrest: between -6 and + 6cm, according to the length of the leg of the user*

## TILTING BACKREST

This feature was especially important to us when designing the furniture, as we wanted to achieve a posture-close body position. Adequate support for the dorsal section is key not only for supine but also for other articular, disc injuries.

- By adjusting the backrest between 90 and 120 °, the optimal sitting position can be achieved;
- the high backrest also provides support for the head;
- the backrest can be reclined to a large extent, so a well-known, half-lying body position is created at the deck chairs, which is ideal for rest, relaxation, but even for work;
- In the semi-sitting, half-lying position, we recommend using the footrest unit, which can be purchased as an accessory, instead of the movable footrest. This ensures that the legs are supported on a horizontal, large surface.



## ADJUSTABLE ARMRESTS

Of course, the primary aspect here was to achieve the most practical and health-optimal construction possible.

- Fully recessed armrest to help the caregiver insert and lift;
- specially designed, heavy-duty armrests that allow people with lower limb paralysis to lift themselves into the chair by grasping the armrest;
- the armrest height can be varied between 15 and 30 cm according to the user's needs;
- The design of the furniture allows the connection of a small computer desk, which makes it easier for the user to work.







## **MATERIAL CONSUMPTION**

SMARTFORM by ANFINEO seating and reclining furniture is based on a stable, welded closed section frame structure. The movement of the armrests and the footrest was carried out with heavy-duty industrial linear units. The backrest and seat are made of flexible sponge padding and breathable faux leather upholstery for medical use.

In the case of a larger number of institutional orders, the frame structure can be ordered in any RAL color, and the upholstery can be ordered in a color and material appropriate to the method of use and the image of the institution.

## **ROLLERS**

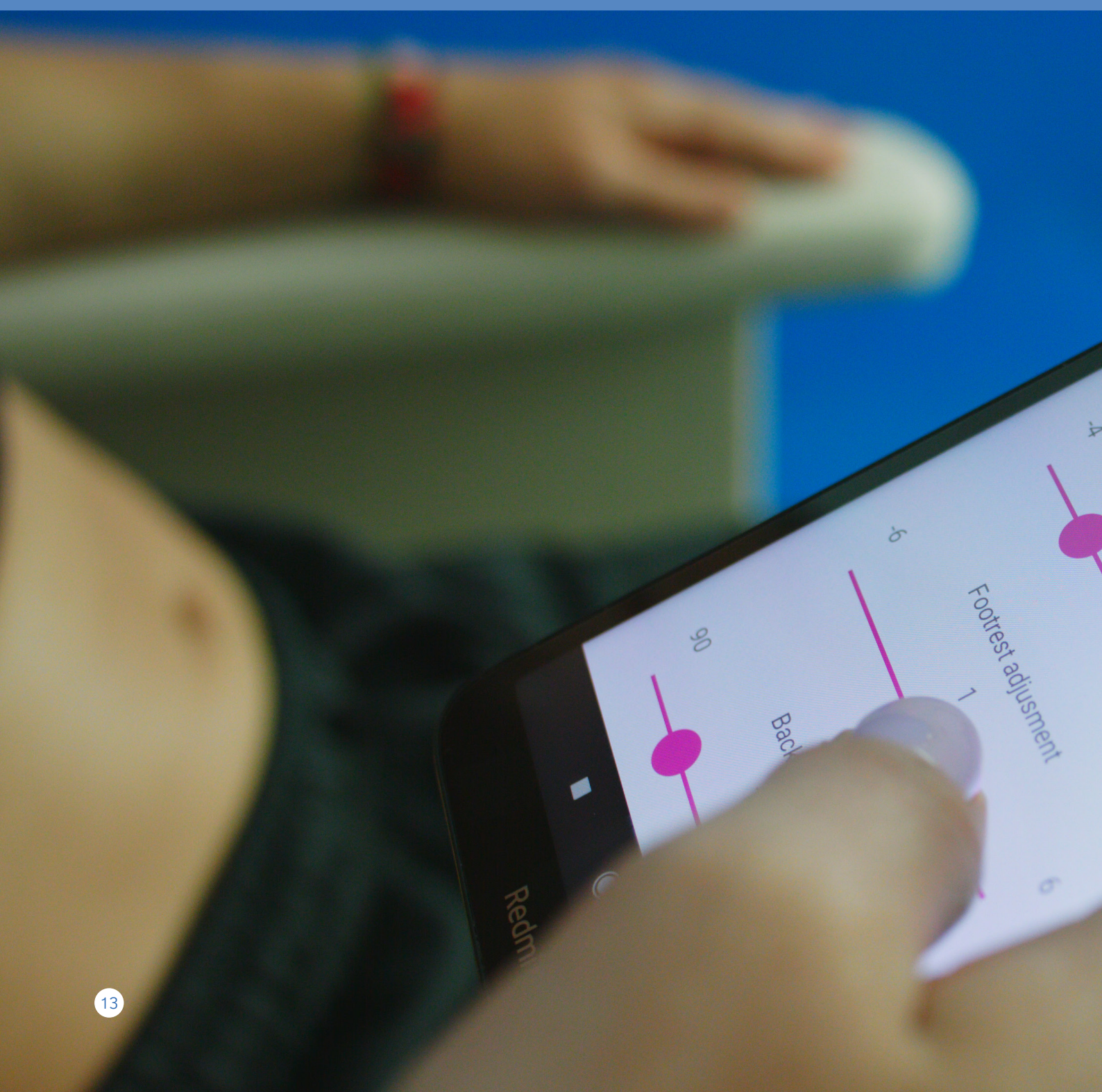
SMARTFORM by ANFINEO is equipped with heavy-duty furniture castors. This was partly due to the high weight of the furniture, and the castors made it possible to move the furniture within the home or institution, as well as to move patients. While the patient is sitting in the chair, the helper can push it to the dining table, computer desk, or any other location.

## THE SMARTFORM APPLICATION

SMARTFORM by ANFINEO can be controlled using an application installed on a mobile phone, so even patients can control its operation. The operator can currently select the most suitable one from 6 movement programs and start it at the touch of a button. In the future, we would like to make more mobility programs available to users, which can be downloaded from the device's website ([www.anfineo.com](http://www.anfineo.com)). Software updates can be inserted into the furniture on the SD card after downloading. The following options are available to the user in the android application related to furniture:

### Selecting a seat movement program:

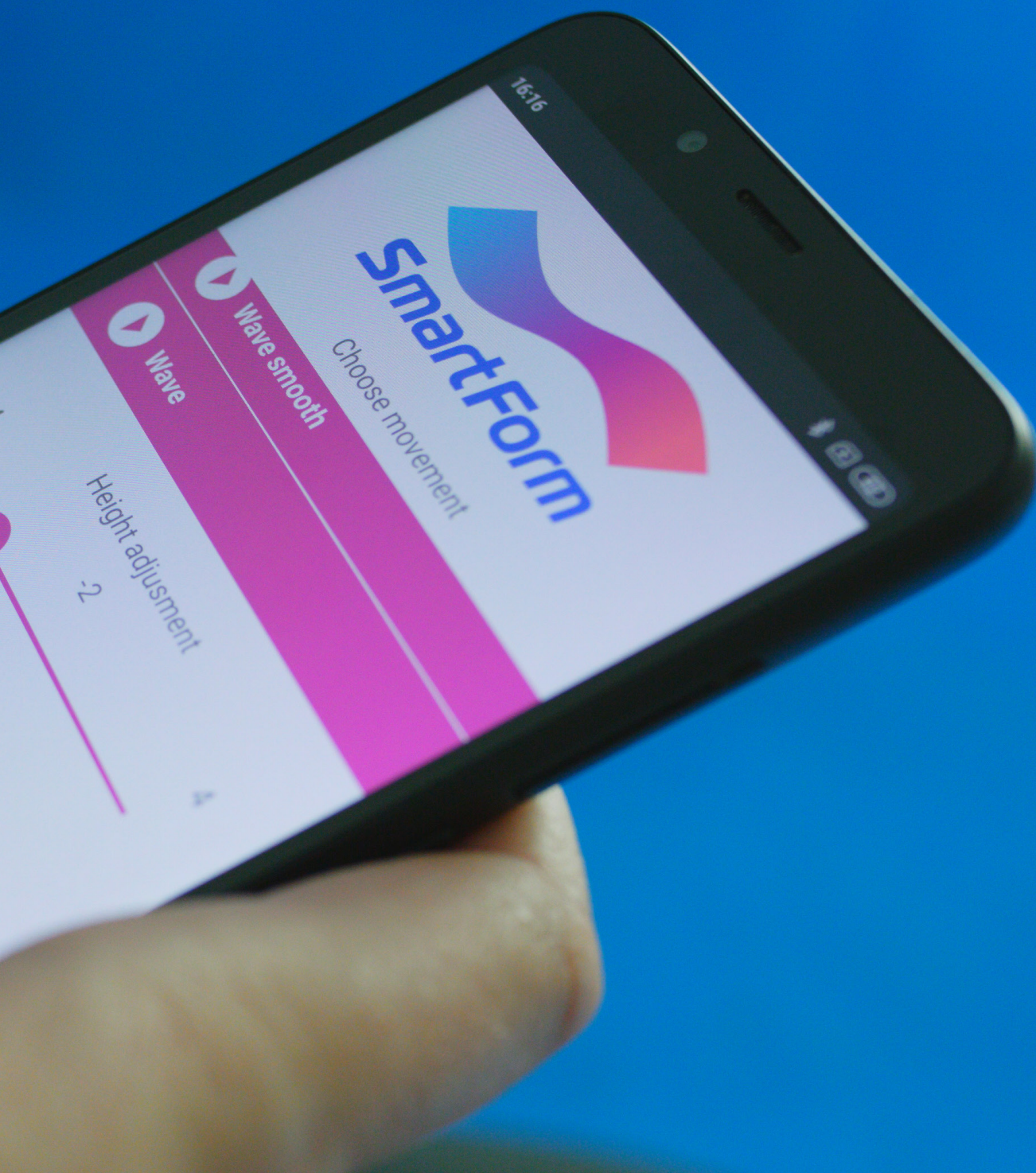
- Lateral tilt
- Back and forth tilt
- Concave-convex
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- Slight undulating motion
- Wave motion

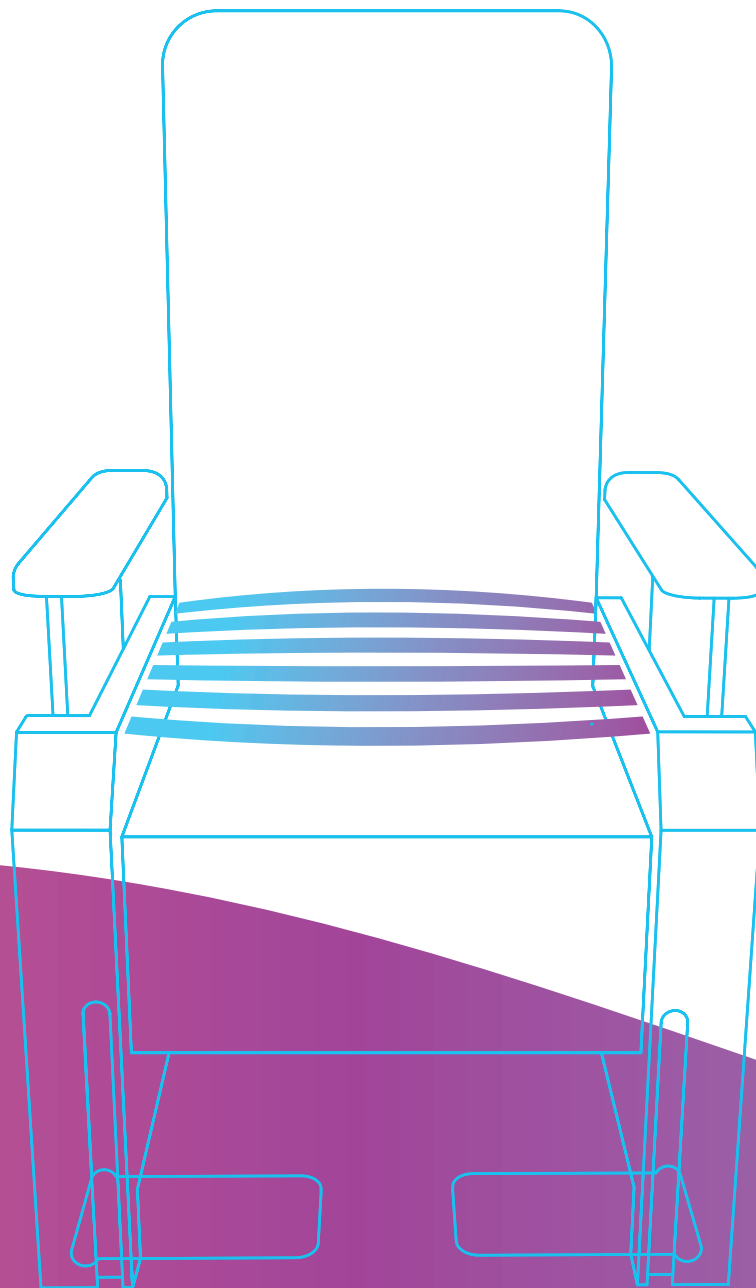




In the application we also have the possibility to make static settings:

- Angle adjustment of the backrest between 90 and 120 °.
- Seat height adjustment: between -4 and +4 cm.
- Height adjustment of the footrest: between -6 and + 6cm.





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