



Exercise for Health in Old Age

Guidelines for setting up fitness trails



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Dear Readers,

A health-conscious lifestyle has a crucial impact on well-being and quality of life in old age. Sufficient exercise, in particular, is indispensable if one is to stay both physically and mentally fit. As medical studies show, exercise can be a key response to many of the illnesses frequently encountered in old age. As our society goes on getting older, it is essential to provide meaningful opportunities for preventative healthcare and, in particular, to promote exercise among senior citizens.

This is why the Hesse regional government has, from 2011 onwards, been testing fitness trail models for older people in Hanau and Darmstadt. Together with the Landessportbund Hessen [Hesse Regional Sports Federation], the Goethe-Universität in Frankfurt am Main, the Hochschule Darmstadt, the Hochschule Rhein-Main, and two businesses, the effect of fitness trails on people's health was investigated with test groups. The results obtained by the universities were extremely positive. Participants reported newly found mobility, greater confidence in their daily lives and more enjoyment from life through social contact in the group. Using the equipment helped to improve circulation, coordination and mobility. The fitness trails also became meeting points in the community which people were keen to visit.

Numerous towns and local authorities in the state of Hesse have now taken the first steps towards making similar opportunities available to senior citizens. The Ministry for Social Affairs and the two test communities have frequently been asked for advice on this. These guidelines have therefore been drawn up in collaboration with all partners involved in the pilot project; their aim is to support local authorities and other interested groups such as associations, clubs, societies, health insurance funds, and companies with practical information concerning the setting up and use of fitness trails. Among other things, it explains what steps should be borne in mind when building and operating such facilities and how these can be put to use effectively in the local community. I would like to express my sincere thanks to everyone who has taken part in testing the fitness trails and drawing up these guidelines.

The pilot project, which was accompanied by an academic study, is a unique example in the whole of Germany of an idea that is already widespread in Asia. It has been shown that the trails offer major potential for improving health in the long term and introducing a greater amount of exercise into older people's everyday lives. In tandem with these guidelines, published by the regional government as part of the "senior citizens policy initiative", I am expressing my wish for as many other local authorities as possible to take up this idea for promoting an active old age.

Stefan Grüttner
Hesse Minister for Social Affairs

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Exercise for Health in Old Age



The ideal fitness trail for fitness in old age

Special promotion of fitness trails for older adults

In 2010 the Hesse Ministry for Social Affairs launched the project "Live healthily – stay healthy" as part of the sustainability strategy. A subproject developed strategies for maintaining health in old age, with a particular focus on promoting exercise. The prevention of old age-related illnesses such as cardiovascular diseases and diabetes is very much in the foreground when providing such exercise opportunities. Accordingly, 2011 saw the Ministry for Social Affairs supporting the construction of two pilot fitness trails and having their effect on physical and mental health

tested in parallel academic studies. The aim of the fitness trails is to motivate senior citizens towards taking healthy exercise in the fresh air.

A survey of 180 residents of Frankfurt aged between 50 and 90 showed that a clear majority would prefer a fitness trail solely for adults to an inter-generational trail.

In fact, the idea of integrating a fitness trail envisaged for adults and particularly for older citizens into a children's play area or placing it nearby is one very much to be discouraged. Where this is done, it is almost always the case that not enough attention is given to the specific requirements of older people.

These guidelines provide an introduction to setting up fitness trails for older adults. This growing section of the population currently has very few public facilities for exercise promotion at its disposal and must receive particular attention when it comes to starting to improve health through exercise.

Target group-specific fitness trails

a) What is a fitness trail?

A fitness trail refers to an outdoor facility with equipment designed to train a variety of physical functions. With the help of either the information boards or an actual trainer, people are shown how to complete a variety of exercises on these machines and thereby improve their mobility, strength, balance and general well-being. Regular use of a fitness trail improves the health of individuals.

Unlike the fitness trails that formed part of the *"Trimm-Dich"* initiative in the 1970s, today's fitness trails are not so much found in areas where people might go on holiday or excursions but more centrally, in towns. There are already precedents from East Asia, particularly Japan and China, where the population has accepted the fitness trail and is very much willing to keep fit using the exercise equipment.

b) Fitness trails for adults

A fitness trail for younger and older adults is equipped with "low-threshold" equipment, which is easy to use and also encourages people who are simply going for a walk to try it out. The equipment is very inviting in appearance and goes down well with adults, above all women and older people. What is special about the trails is that the equipment allows people to train their mobility, coordination and stamina without having to use huge reserves of strength. Simple instructions make the equipment easy to use. There are



Example of a "mixed trail" in Darmstadt with sports and more accessible equipment

also machines for massaging acupuncture points and relaxing muscles. Some equipment can be used by two people and hence promotes communication with others. The pilot trail of this type promoted by the Ministry for Social Affairs was set up in the Hanau *Schlossgarten* [palace garden].

c) Fitness trails for more athletic people

There are also public fitness trails for more sporty people and those who want a more challenging level of exercise. The provision of supervised training sessions here also encourages less sporty people to use the equipment. A fitness trail of this type was set up in the Darmstadt Bürgerpark [municipal park] as a pilot trail for use by more athletic people and supervised training groups. These mixed trails offer equipment, and hence exercise opportunities, both for sporty people and for those who have less training or are older.

d) Fitness trails for families

A further type of fitness trail offers opportunities for children and adults to spend time together. These combine exercise equipment with things to play on, thereby creating a collective experience for the whole family. This type of fitness trail is predominantly used by children for playing and exercising, but many of the accompanying adults play with the children on the equipment or try out the machines at least once. Older people, however, would feel less comfortable in these facilities.



Motor skills park at the
"Multi-Generation Trail"
in Nürnberg-Langwasser



Diverse health benefits

Over 90 % success rate

Physical benefit of regular exercise at a fitness trail

Lack of exercise is a typical phenomenon accompanying today's work and lifestyle habits. It can negatively impact health, for example by accelerating muscle wastage, and can lead to a loss of physical and psychological strength. By age 80, the number of muscle fibres drops by almost 40 %. In old people it can be clearly established that the less muscle, the lower the metabolism and energy consumption. Hormonal changes connected with the aging process also reduce the muscle mass.

Very often, muscular strength, physical balance and confidence in walking deteriorate, with the result that for example the risk of falling rapidly increases. Regular exercise can, as well as improving the quality of life and increasing the number of healthy years, reduce the risk of having a fall.

Commissioned by the Ministry for Social Affairs, the Department of Sports Medicine from the *Goethe-Universität Frankfurt* therefore tested the effects of regular use of the pilot trail. In a before-and-after study, detailed research was carried out into the effects of 3 months' guided exercising on leg strength, balance and walking speed.

The study proved that exercising on fitness trails has significant effects on the physical capacity and functioning of senior citizens, with over 90 % of participants improving their functional capabilities. These improvements allow us to expect effects in terms of fall prevention and everyday functioning. Increased leg strength and better balance means that it is easier to climb stairs and confidently overcome everyday obstacles, such as getting onto a bus or tram. A faster walking pace also means in everyday life that

a person can safely cross the road when the light is green. The latter is a problem faced by more than 90 % of over 80-year olds.

The testing procedure

A total of 94 people aged 60–94, with an average age of 68, participated as test subjects in the academic study. The exercises at the fitness trail were supervised by specially qualified trainers from local sports clubs.

All participants were tested before the start and at the end of the three-month study period using an identical test plan. Each participant in the study had to pass through four different measuring stations:

- A special measuring device was used to determine leg strength in Newton metres [Nm] while seated. Participants were told to push as hard as they could for five seconds against a fixed resistance (isometric maximum strength measurement). The highest value out of three attempts was used for the evaluation.
- To measure walking speed, each individual had to walk briskly along an 8m walkway that was fitted with multiple individual sensors.
- To determine balance, the test participants tried to stand as still and steady as they could for 90 seconds with their eyes shut. Any swaying was recorded precisely to the millimetre and, using a computer, converted into an individual balance measurement.
- Participants' anxiety about falling in their everyday lives was determined using a special questionnaire (FES-I). This self-evaluation, referred to as subjective fear of falling, specifically records concerns relating to performing certain everyday activities.



Results and discussion

During the 3-month study phase participants used the fitness trails twice a week on average (once with guidance, once on their own) for about 50 minutes. The regularity of this exercising produced statistically significant improvements in leg strength and walking speed.

- Approx. 3 / 4 of all participants were able to increase their maximum leg strength. Individually, considerable increases in strength were measured, up to as much as 55 % of the starting value.
- At the same time, an increase in walking speed was demonstrated in more than 2 / 3 of study participants. Twenty people increased their walking speed by over 20 % and one person increased it by as much as 52 % in the walking test, which was 1.5 times as fast as 3 months previously.
- Compared with the effect of the fitness trail on strength and walking, changes to balance were less uniform. Nevertheless, many people significantly improved their balance.
- Fear of falling, which at the beginning of the study was perceived as comparatively low, was reduced still further.

Significant increase in physical capabilities



In each case, percentage of all participants (n=94)

Regardless of age, senior citizens from all the decades investigated benefited to an equal extent from the fitness trail. Looking in various ways at the results shows direct links between the effects that can be achieved from fitness trails, frequency of exercise and training, habits in terms of activity, and physical capacities.

Physically, those who benefited most from a fitness trail were those who:

- until then had been physically active for less than five hours per week
- used a fitness trail at least twice a week
- had low levels of strength, balance or mobility.

Nearly everyone improved at least one ability relevant for everyday life (strength, walking speed and balance)



Number of test subjects: 94

Using a fitness trail offers a further opportunity for encouraging people to get into or get back to an active lifestyle, or for helping maintain such a lifestyle. The idea of the undemanding nature of the fitness trail, something that is primarily designed to appeal to beginners, seems appropriate. Exercising and training at a trail not only has an impact on the risk of falling. It is clear that it is also suitable for providing wide-ranging support in terms of physical capabilities. The prospect of enjoying healthy old age thereby increases since, as has been proven, sufficient physical activity improves quality of life and reduces the risk of numerous, particularly chronic, diseases. The study results underline the positive effect of using fitness trails in situational prevention and in promotion of community health.

Like a village well

Social and psychological effects of regular fitness trail use

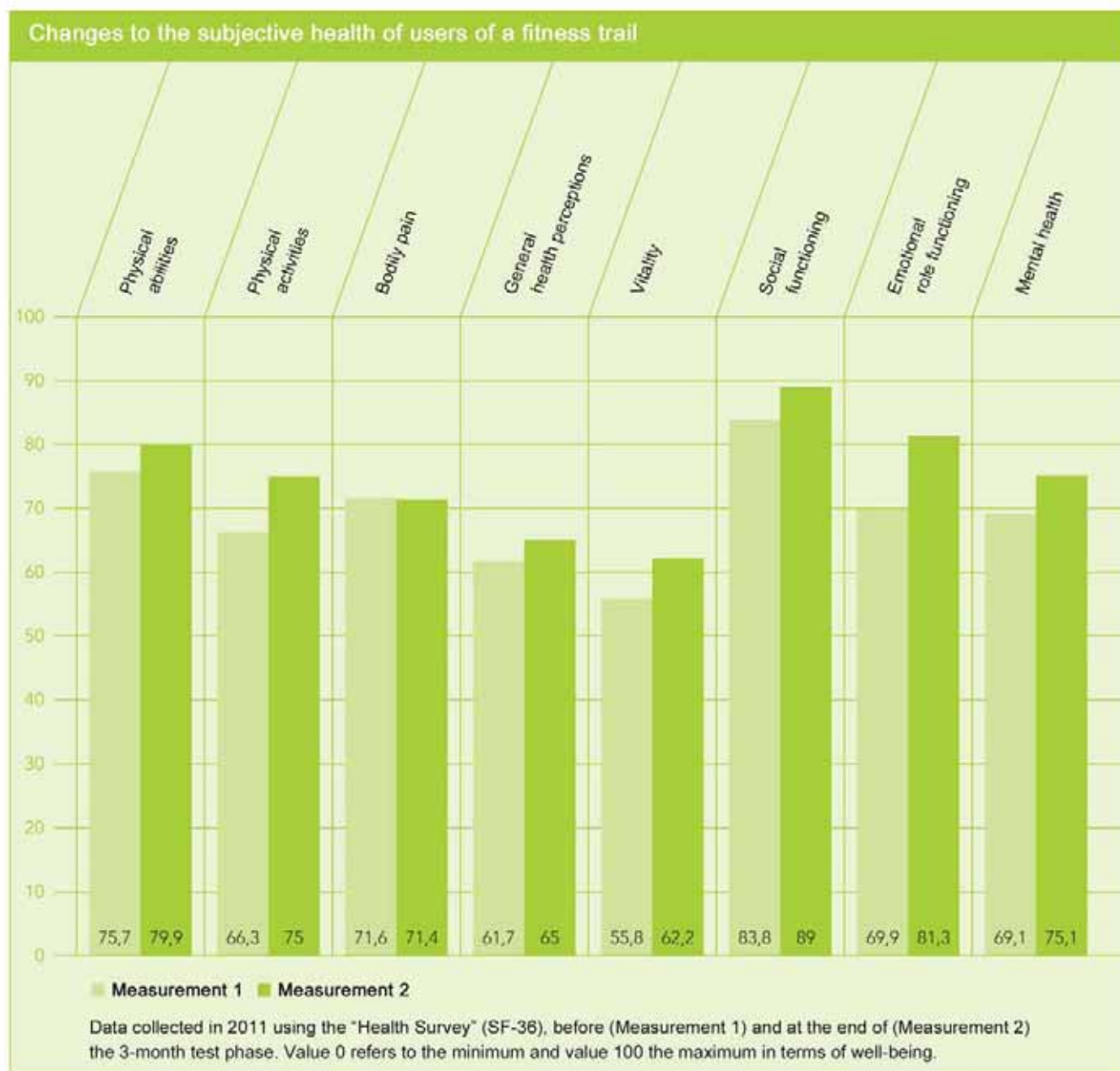
In a second study, the Department of Social Sciences and Social Work at the *Hochschule Darmstadt* looked at psychological aspects of sport and exercise in old age, and of the use of fitness trails.

The aim of psychological health promotion through activity, sport and exercise is to help older people to improve and maintain their mental and physical well-being. The value and positive effects for the mind and body of regular exercise in old age are explicitly confirmed by the results of the effectiveness measurement from the two fitness trails in Hanau and in Darmstadt.



After successfully completing the exercises, the whole group meets to finish off the session together with refreshments.





Explanation of the aspects surveyed:

Physical functioning: covers physical activities such as taking care of oneself, walking, climbing stairs, bending, lifting and moderately difficult or strenuous activities

Physical role functioning: covers work and other everyday activities

Bodily pain: covers pain and its influence on normal work, both at home and elsewhere

General health perceptions: personal evaluation of health, including current health condition, future expectations and resistance to illness

Vitality: feeling full of energy and vigour, or feeling tired and drained

Social functioning: covers the influence of physical health and emotions on normal social activities

Emotional role functioning: looks at how emotional problems negatively affect work or other everyday activities

Mental health: general mental health, including depression, anxiety, emotional and behaviour-related control, general positive mood

A clear improvement in subjective health was established with seven out of eight variables.

The positive changes were scientifically significant for the following categories:

- Vitality
- Social functioning
- Emotional role functioning
- Mental health

This very much confirms the value and benefit of the fitness trail when it comes to the quality of life of participants.



Statements from members of regular groups at the fitness trail:

"After visiting the fitness trail in the Darmstadt Bürgerpark [municipal park] twice a week last summer, I feel 10 years younger and can have fun with my grandchildren again" reports the 69-year-old former mechanical engineer Bijan Kia.

A "young-at-heart" pensioner in her seventies announced with pride that she can "now once again applaud vigorously till the very end after a good play in the theatre".

The fitness trail was described by participants in Hanau as a "village well" "where nice, friendly people can always meet and get to know each other without any great song and dance". And after the exercise session "people go to a café together and enjoy relaxed company and being together".

Participants become better integrated socially in the long term as part of a programme involving a fitness trail. However, the opportunity should absolutely be of a voluntary nature. Concepts such as achievement, ambition, strength, and assertiveness should be regarded critically. Success is not always about faster, higher, further! Another element to consider is that the images from the advertising industry of "everlasting youth, of obsession with beauty and health" should not place any pressure on the recommendation for more sport and exercise in old age. Everyone should find precisely the level and type of sport and exercise that meets his or her needs and capabilities, and is 'made-to-measure' for their life. A fitness trail not only strengthens body, mind and spirit, but also encourages people to socialise and reduces the tendency for old people to be alienated or stigmatised.

A fitness trail and guided exercise programme for older people offer an ideal, highly recommended and worthwhile opportunity for senior citizens in a community to improve their level of health, their mental well-being and to significantly better their quality of life.



Setting up a fitness trail

Fifteen minutes' walk to an open-air work-out

What locations are suitable for a fitness trail?

In the aforementioned survey of older citizens, nearly all thought that public parks were the best locations for this type of fitness trail. There are now several fitness trails in Germany and most locations are – if they are in public places – in green spaces and parks. In addition, there are fitness trails in the direct vicinity of social institutions, such as old people's homes or healthcare facilities that can also be accessed by the public.

Fitness trails should be located as centrally as possible in the community or district of a town so that it does not take too long to get to them. In the case of parks, it is known that the catchment areas for adults

are up to 1000m, which corresponds to a walk of approx. 15–20 minutes. It should also be borne in mind that older people frequently need more time for the same distance.

It is not only the distance that determines the use but also the accessibility: the trail should be reachable on foot and without any obstacles to access. Cycle paths and, above all, local public transport network connections are important. As they get older, adults predominantly go on foot or use the town's public transport network. In Offenbach, for example, a fitness trail was set up in an area of green space and a variety of groups of senior citizens travel there on the public transport network, specifically for exercising. Cycling – where the cycle path network is safe – is also still very popular among the fifty- and sixty-year-olds, although the general trend is that cycling and driving decrease with age.

Locations for fitness trails should not just be easily accessible; they should also be affected as little as possible by nuisances such as noise and air pollutants.

Designing a fitness trail

a) Location within a park

To ensure that a fitness trail is actually used, the most sensible thing is to locate it within a park. Two overall parameters should be borne in mind here: first, the fitness trail should not be placed centre stage, i.e. not in the middle of the grassy area or at the points where the park is entered. Good locations are those that are more at the side of the park.

On the other hand, no "scary areas" should be created; in other words, the trail should be visible to others and not be out of the way. Socially controlled green spaces are advantageous. Best suited are "busy" (but not "crowded") parks where there are lots of people or where there are facilities with staff, such as for example a kiosk selling alcohol-free drinks.

Since the trails are primarily used in the summer, it should be ensured that they are not in the full sun but partially shaded.

b) Selection and number of machines

Fitness trails are only successful if they are attractive to the users. To start with the target group should be precisely defined, so that the relevant equipment can be selected. Also, workouts that are worthwhile for the user must be offered. A variety of machines should therefore be selected that address different areas of the body – here, specialist advice e.g. from physiotherapists or sports advisors is helpful. Also, a trail is only attractive if there is a sufficient number of machines. A recommended minimum would be 5–6 machines. No one is going to go a long way for two or three machines in a public space.

In any event, it is recommended that decision makers and future users look at existing fitness trails in situ and try out the machines themselves.

c) Additional equipment

It is beneficial to have places to put things (e.g. a bench), such as clothes or bags. A bench is also good for small breaks. However, benches should be positioned in such a way that those sitting on the benches cannot directly look at the trail. Hedges and bushes can shield the trail from view and help integrate it into a park.

Adequate lighting can extend the period of use. Older people in particular are keen to have public toilets nearby.



Easy accessibility, shade and seats are ideal for a fitness trail.

d) Signage

An introduction board should explain the idea and purpose of the fitness trail and give information on how to use it. A sign is provided on each machine which gives exercise instructions for different levels and describes, in a way that is understandable to everyone, how it works and how to use it safely.

It is motivating to those exercising if there are graded instructions presenting the different exercises and different levels of difficulty. Pictograms should also supplement the written explanations.

The forthcoming DIN 79000 (Version 2011-05) contains a variety of requirements relating to the signage. At the points of entry to the trail, signs should be provided that have the following minimum information: "Use of the machines only by persons older than 14 years; follow the exercise instructions on the machines; please ensure you are in good enough health to participate safely; avoid over-exertion on the individual machines". Additional information must also be provided on the individual machines: exercise instructions with pictograms; main function of the machine; if necessary:

safety information and maximum permissible weight. It is important that all written explanations are in a sufficiently large font size so that they can also be read easily by older people. Some local authorities indicate that use is at the person's own risk.

Installation

Construction and maintenance of public parks is the responsibility of the parks and gardens department or, with smaller local authorities, the department of planning and building inspection. These departments should certainly be involved from the start.

The DIN 79000 "Fixed outdoor fitness equipment – safety requirements and testing procedures" is currently available in draft form. The final version will probably be published in spring/summer 2012. It sets out safety requirements and testing procedures for the fitness equipment, along with safe separation distances, necessary safety surfaces and other things. The details below are based on the draft version E-DIN 7900 from May 2011.

Wir begrüßen Sie auf dem **Fitnessparcours**.
Trainieren Sie Ihre körperlichen Fähigkeiten je nach Lust und Bedarf!
KOORDINATION - KRAFT - AUSDAUER - BEWEGLICHKEIT



Introduction board
from the trail in the
Rose-Schlöninger park
in Frankfurt a.M. (built
in 2011)

ORIENTIERUNG

Lesen Sie diese **Einführungstafel** sorgfältig und orientieren Sie sich anschließend anhand der **numerierten Stationstafeln** durch den 4-Forle.

Die Übungsstationen sind farblich in folgende **Belastungsstufen** unterteilt:

- **GELB** steht für Einsteiger-Niveau
- **GRÜN** steht für Fortgeschrittenes Niveau
- **BLAU** steht für Trainiertes-Niveau

ÜBUNGSANLEITUNG

Sie entscheiden über Ihren **eigenen Trainingsplan**. (Sinnvoll ist es nach längerer Sport-Abstinenz vor Trainingsbeginn eine **medizinische Untersuchung** durchführen zu lassen!)

Die **effektivste Trainingsfolge** ist immer:
12-15 Min. vor jedem Training

MODUL ERWÄRMUNG

Bewegen Sie sich **12-15 Minuten** locker trabend über das Trainingsgelände oder auf einer ausgewiesenen Laufstrecke. Alternativ: Fahrrad.

MODUL KOORDINATION

An diesen Stationen verbessern Sie Ihre Geschicklichkeit. Koordinative Fähigkeiten wie z.B. Gleichgewichtsfähigkeit, Reaktionsfähigkeit und Orientierungsfähigkeit erleichtern Ihnen das Leben nicht nur im Sport sondern auch im Alltag. Orientieren Sie sich an den **Stationstafeln**.

MODUL KRAFT

An diesen Stationen kräftigen Sie Ihre wichtigsten Muskelgruppen. Machen Sie jeweils **eine Übungsserie** mit der angegebenen Wiederholungszahl, bewegen sich zur nächsten Station und wiederholen diesen Rundlauf, so oft wie angegeben, **oder** wiederholen Sie **alle Übungsserien** an der jeweiligen Station so oft wie angegeben und bewegen sich dann erst zur nächsten Station. Durch eine ausgewogen trainierte Körpermuskulatur stabilisieren Sie Ihren gesamten Bewegungsapparat und beugen damit möglichen Fehlbildungen, insbesondere der Wirbelsäule, vor. Orientieren Sie sich an den **Stationstafeln**.

Train
L

Schwe

Brus
Oberk

a) Selection and installation of machines

When selecting machines, it should be ensured that the machines have been safety tested and certified by the TÜV [German Technical Inspection Authority] or other testing organisations. In Germany this requirement applies to most equipment.

Manufacturers are obliged to supply assembly and installation instructions for individual machines. These contain information regarding installation, foundations, and the requirements relating to safe separation distances, ground coverings and, as necessary, safety surfaces – as is usual for children's playgrounds. The assembly and installation instructions for certified fitness and exercise equipment take into account the relevant standards.

b) Stipulations from DIN standards

As we know from children's playground equipment, the machines must be installed in such a way as to be frost-protected, stable and safe to operate. As a rule, the machines are embedded in concrete (mixed on site). European standard EN 206 and also DIN 1045 are applicable to the production of the concrete foundations. Concrete quality C 25/30 (previously B25) is generally sufficient for this. Installation depths for foundations are specified by DIN EN 1176 (and E DIN 79000). These depend on the shape of the foundations and are 40cm or, where the sides of the foundations are tapered, 20 cm. It should be ensured that the concrete has cured before using the equipment.

Safe separation distances, necessary ground coverings and safety surfaces are also laid out in DIN 79000. For fitness equipment, this generally means that a safe separation distance of 1.5 m should be maintained around the machine. Depending on the type of machine and the free falling height, the necessary safe separation distance may be bigger – the manufacturer's information is the determining factor here. For comfortable use, distances greater than 1.5 m are preferable (at least 2 to 2.5 m).



Visual depiction of how to use a machine, including safety information.

For some machines, stable ground coverings such as waterbound surfaces, stone or synthetic materials (e.g. impact-absorbing surfaces) are required. For equipment where the free falling heights are up to 60 cm, no impact absorbing protection is required and there are no safety requirements concerning the ground covering. Grass or firm ground coverings can be used. Where the free falling heights are up to 1.5 m, grass is sufficient as a safety surface. With machines where the free falling height is from 1.5 m to 2 m, a soft landing surface is needed, e.g. bark mulch, wood chips or sand. Other possible alternatives are safety surfaces in line with DIN EN 1177.

c) Practical tips regarding ground covering

Fitness trails are often positioned on grass, which may well be sufficient in smaller communities. If intensively used, however, it is recommended that the ground be stabilised. Suitable options are (where the free falling height is less than 60 cm) waterbound coverings or, as a more expensive option, safety surfaces. Even if the machines stand on grassy areas, it is worth having a safety surface, wood chaff or other material directly around machines to avoid the grass becoming worn down. For machines where the free falling height is upwards of 1.5 m, a safety surface is an essential requirement.

Maintenance and liability

Inspection and maintenance of fitness trails are subject to the same conditions as children's playgrounds, i.e. they must be checked regularly by professionals. These requirements are also laid out in DIN 79000:

- visual "routine inspections", which, depending on location, must be performed as required (in locations where there is a risk of vandalism, as often as daily),
- more precise "operational inspections" or function checks, which should occur every 1–3 months,
- one annual main inspection.

In addition, inspection plans must be drawn up. In each case, the manufacturer's or supplier's maintenance instructions should be taken into account.

The relevant operator, e.g. the local public authority, is liable for ensuring that the machines are installed professionally and not damaged. In general, the machines are relatively robust with regard to resisting vandalism. Infrequently small defects may arise, chiefly having to do with the movement mechanisms. As a rule, they should be repaired free of charge by the manufacturers within the scope of their guarantees, unless the defect is caused by a third party.

Most machines are safety tested and certified in Germany (e.g. TÜV-tested). This ensures that the machines themselves do not pose any danger to users (persons over 14 years). In addition, the certification process classifies the machines with respect to necessary safety requirements (impact absorption, safe separation distances, etc.), which – as described above – are taken into consideration in the assembly instructions.

Liability for accidents that are the fault of the users, e.g. by a person falling from a machine, or accidents from improper use or use by a person with physical weaknesses, lies with the users themselves.

Trails designed for children and adults should in all cases be checked by an expert in playground equipment. In accordance with DIN 79000, the equipment is, as per the stipulations for the introduction boards, only to be used by persons older than 14 years. An expert should therefore check whether the machines also actually meet the requirements of EN 1176 and are therefore also suitable for children.



Unfortunately it is virtually unavoidable that the edge will quickly become worn down if it is not given any special protection.

After fixed installation, safety surfaces offer the necessary protection for future users





Finding and engaging partners

Engaging partners a timely fashion

As with all new construction projects or modifications, it is worth including future users, together with decision-makers and relevant stakeholders from a local authority or district, at an early stage and involving them in the planning process. In particular, institutions that work with the elderly or senior citizens' organisations should definitely be involved if they are not indeed the ones pushing for the fitness trails. The same applies to the regional or local cost-bearers in the healthcare context who are particularly relevant as potential partners. First, this can improve the results of a planning process and second, involvement also increases acceptance of projects. As already stated, it is in any event recommended to find one or two existing trails and try them out together.

Particular involvement of sports clubs

Success through guided exercise groups

On the basis of experiences to date, supervised and guided exercise sessions, e.g. by specialist sports club staff, appear to be predominantly worthwhile for older people or those who are "out of shape". The high demand in the case of the pilot projects in Darmstadt and Hanau in 2011, along with experiences from other towns, allows us to conclude that supervised sessions from trainers motivate considerably more "unsporty" people to try out the sports equipment and work out. Introductory lessons or regular supervised sessions for groups reduce the personal inhibitions which may well exist in a public setting. Older people in particular, as well as people with physical limitations, are often unsure as to what will do them good and what will harm them. Here too, expert advice in situ is advantageous.

In 2011 the town of Hanau organised a variety of guided groups at the fitness trail in the *Schlossgarten* [palace garden]. Participants in the groups were supervised by a trainer and studied by the academic team, both from sports medicine and psychological perspectives.

In order to appeal to and motivate the age 60-plus group (inactive people or those who do not exercise regularly) to use a public fitness trail, supervision by qualified and experienced trainers is recommended. Simply providing a fitness trail is not enough to get inactive people moving, particularly if the aim is regular, long-term training with health benefits. As observations by the trainers involved in the project confirmed, older people with little experience at exercising are initially reserved and in some cases anxious. They want to be guided, and need instructions in the first weeks of training. Only then do they become confident, make progress and become happy about using the equipment. Initial improvements become apparent in the coordination and balance exercises. Pride in their progress, fun and enjoyment mean that they continue to exercise and determine their own training programme.

a) Advantages of a public fitness trail for citizens

Arguments in favour of exercising at a fitness trail are: the non-binding nature of the participation, without the need to be a member of a club or be registered, no or minimal costs, and competent guidance on how to use the equipment. Friends and acquaintances can be brought along, and people can also get to know their fellow citizens on site. People are encouraged to use their own initiative; exercise workouts are agreed upon. Those with more experience can take on an advisory role and give tips to new people who are interested.

b) Advantages for clubs

People are informed about local clubs by the trainers who are supervising at the trails, thus enabling people to find out about other groups (e.g. power walking). Club members bring along new friends and acquaintances. The fitness trail can be incorporated into a fixed training programme. Power walking or running opportunities can be supplemented by outdoor fitness training.



c) Aims of meaningful supervision

Guided supervision achieves an "ice breaker effect" enabling participants to then exercise independently. The trainer provides those exercising with tips on what training on the machines should look like if it is performed correctly and is to be effective. Personal interaction with those exercising is perceived as enormously important and motivating. Specific corrections to exercises, modified versions of the exercises, recommended changes to intensities, together with expert background information help engender trust in the trainers, in machines and above all in the users themselves.

Participants should inform the trainer one-to-one about any health limitations (e. g. diabetes, heart attacks, joint problems, etc.). While explaining how to carry out the exercise correctly, the trainer can refer to problems that may occur and make the person exercising more aware of their own health issues.

d) Trainers: qualifications and insurance cover

All people supervising should have a qualification or experience in using the equipment. Teaching people how to use the equipment allows them to be informed about the benefits and risks, allows them to start at a low level, and avoids having them overexert themselves and be overambitious. A limited amount of medical advice can be given. Incorrect use of the machines is prevented. Supervision of a group of people exercising does not need to be gender-specific. However, the people addressing the target group should be adults with life and training experience.

Trainers who have taken over the supervision of a fitness trail on behalf of a club are covered by the Hesse Regional Sports Federation's insurance. Trainers working on behalf of a local authority or other non-profit institutions will have liability insurance cover from those who have commissioned them.



Trainers (in Hanau, for example, wearing an easy-to-recognise red T-shirt) provide encouragement, make sure of the correct posture, give tips and evaluate their experiences

e) Training session at a fitness trail – sequence of activities

Before using a fitness trail, warm up exercises or a warm-up through walking or power-walking followed by stretching exercises is recommended. Music plus fun coordination and balance exercises help create a positive initial mood while warming up. It is sensible to have easily completed exercises for the cardiovascular system, mobility and coordination. It is necessary to raise the body temperature, particular in cooler weather, so that the blood flow is improved. This stimulates the circulation and metabolism, as well as increasing the tension and mobility of the muscles. Particularly with the age 60-plus target group, proper warming up makes the tendons and ligaments more elastic, thereby preventing muscle cramps and injuries.

With some machines, their design is quickly obvious and self-explanatory. Descriptive signs that are less easy to understand can be explained further by trainers to ensure that the exercise is completed correctly (e. g. leg-lift, back stretch). The trainer should demonstrate the activities and explain them, thereby relieving participant anxieties. He or she recognises the difficulties which could cause problems for those individuals inexperienced in exercising. The Trainer provides assistance and makes sure that users are doing the right amount of exercise and in the correct order (alternating exertion of muscle groups). Guidance and monitoring is essential in the case of back stretching exercises.

Once the exercise programme on the machines has been completed, a warm down or power walk with stretching exercises is a good idea. There should be places to sit and rest during the final conversation. The trainer can give the person exercising some warm-up exercises written down to enable them to practise on their own.



Benefit of guided exercise at a fitness trail. exercises for warming up, stretching and coordination without machines complement exercises on the machines



A training plan for those exercising can be expedient and help to balance the phases of exertion and relaxation, as well as ensuring that the exercises are of appropriate intensity. After a few practice sessions those exercising are then usually able to organise their workouts themselves.

f) Training session times

The supervised training sessions in the mornings from 10:00 to 12:00 and also those from 14:00 to 16:00 are popular. Lunch takes absolute priority in the time between 12:00 and 13:00. The total time estimated for the warm-up phase, supervision on the machines, along with the 'rounding off' and group discussion is one hour. Bad weather (rain) arrangements should be clarified in advance. Trainers should keep to the agreed times for training sessions, since the age 60-plus target group sets store on punctuality.

Regular training for the target groups in the winter months is not recommended if the outside temperatures are around freezing or below. Winter clothing reduces mobility and the warm-up phase for one training session would be very long.





Pilot trail in Hesse

Hanau Schlossgarten [Hanau palace garden]

a) Establishing aims

The town of Hanau has set up a fitness trail with equipment which arouses curiosity thanks to its design, is fun to use and even appeals to people not keen on exercise. This accessible exercise opportunity is very well-suited to people of advanced years.

It was and remains a key aim that the fitness trail is not only perceived as a pleasant form of exercise, but also serves to forge social contacts among users.

b) Questions of location

A key factor for the success of the fitness trail is the location. With this in mind, town data sources were evaluated, particularly the number of inhabitants and structure of the population, the age structure and locations of social institutions. Other factors in the decision on the location were its accessibility by regional public transport, the pleasantness of the experience, the feeling of safety and security, being shielded from view while exercising, and access to public toilets.

c) Planning, organisation and implementation

Lead-managed by the Department of Sport, a work-group was formed with the owner-operated municipal enterprise Grün, the office dealing with senior citizens and the department for preventative health care. Through this huge fund of contacts and connections, the partners needed for the success of this project were found.

A comprehensive publicity campaign plays a key role in the trail being very well received by citizens.

Working closely with clubs and volunteer trainers, the dates and times of expert-led training sessions being offered were publicised. In addition to the core group participating in the academic study, a growing circle of interested people emerged who were curious or who had heard about the trail through word of mouth.

d) Motivation of the target group(s)

One key factor for success is to offer public training sessions that are free of charge to users and are led by expert trainers.

"Exercise novices" are introduced to the machines. There was a variety of different feedback from users who had overcome their initial insecurities, and in some cases also anxieties. They became more and more confident and sure of themselves, and communicated and laughed with lots of other users in the process.

e) Supervision by trainers

Trainers have an "ice-breaker effect". The majority of users were pleased that an opportunity for exercise exists that is outdoors and available to everyone, and which they can always use without having to join a club or complete a course. However, the trail is also available to clubs, if they wish to organize club activities at these locations.

When looking for suitable staff, it became evident that it is beneficial if these staff are not working, or are retired, since the main period of use for the target group of senior citizens cannot be staffed by volunteer trainers who are also in employment. In addition, if the age gap between trainer and users is not too large, this helps to make the process a success.

Since there is a big school near the site, the trail is also used at break time by pupils. This makes for pleasant interactions between generations.



Fitness trail in the Schlossgarten [palace garden] – shaded, on the edge of the park, but in the middle of town.

f) Outlook: independent organisation

It has become apparent that the target group prefers a time period between 10:00 and approx. 16:00. Before or after these periods, it was more common to encounter other user groups.

In the pilot year 2011 the public guided sessions were only made available during the summer period. This will be continued in 2012 together with the volunteer trainers and clubs, albeit with fewer sessions.

With the help of these opportunities, the town of Hanau would like to make the trail a fixed component of the exercise facilities provision by the town, and would like such opportunities to start to organize themselves, just as has been the case with running meets.



Darmstadt-Bürgerpark [Darmstadt Municipal Park]

a) Planning and general conditions

In 2011 Darmstadt set up a pilot trail in the municipal park. The steering group that was overseeing the sports development process in Darmstadt set priorities for the implementation of the recommendations on action, which were dealt with as the result of a sport development study submitted in 2007.

A workgroup involving the Department for Social Affairs and Prevention, the Parks and Gardens Department and the Department for Sport developed the concept in collaboration with external experts. The fitness trail team, after visiting potential locations in the Darmstadt municipal area, made a decision about the location of the pilot trail. The financing of the trail was secured through third-party funds (trust).

b) Responsibilities

Overall responsibility lay with the Department for Social Affairs and Prevention. A decision by the municipal authorities gave the authorisation for setting up a fitness trail.

When selecting the equipment trail and the individual stations, the expert suggestions by the Department for Sport were drawn upon, which also created links between the sports clubs and trainers, the sports association and the Regional Sports Federation.

The Parks and Gardens Department emerged as the responsible authority for the creation of the trail. It investigated the site on which the trail was to be set up. Since the Department was very busy with other tasks during the period stipulated for the construction work, the latter was not carried out by the Department with its own staff but put out to tender to external companies. The first quarter of a year is regarded as a suitable period of time for setting up a trail.



Machines in the Darmstadt trail are spaced widely, ensuring enough space for users to exercise away from the machines.

c) Obtaining target groups

The fitness trail was chiefly set up for older people, but also offers exercise stations for younger and more athletic people. The fitness trail was publicised through flyers at meeting centres and residential homes for senior citizens, as well as in public institutions and through reporting in the local newspapers and on the internet.

Clubs were contacted and encouraged to regard the fitness trail as new infrastructure, and to develop opportunities for their programme of activities. It was also suggested that they develop "taster" offers and provide combined sports and exercise opportunities (power walking and fitness trail, cycling to the fitness trail followed by training on the machines).

Pupils and those training with the sports clubs use the trail during their breaks, before and after their training sessions and lessons. The sports infrastructure in the municipal park in general made inter-generational use possible.

d) Location

The municipal park was selected as an attractive location for the fitness trail. For one thing, it is a recreational space near the town centre that is used by many segments of the population. In addition, there are various sports facilities that form part of the park or are in the immediate vicinity. The municipal park is well served by the local public transport network. In the residential area around the park, there are a variety of housing facilities for older people. Even closer to the park are nearly all types of schools.

The fitness trail constitutes its "own space" within the park. When choosing a location within the park, it was ensured that there was at least partial shade and that there was somewhere to sit nearby. It was ensured that there were appropriate toilet facilities available for users.

e) Choice and use of equipment

Selection of the machines is based on the aim of improving, through training, the everyday motor skills of older people. Regular use of all the stations of the trail replaces, in some cases, special "fall prevention courses". Poise and balance are boosted along with steadiness, surefootedness and grip. Stations that promote coordination were combined with ones that train stamina and those that improve strength.

The way the stations are put together means that target groups with limitations can also use them (e.g. those suffering from dementia, stroke victims). Groups of pupils from special schools use the fitness trail for their PE lessons and in some cases also for cross-curricular learning.

Anyone
can join in



f) Supervision and evaluation of the pilot phase

During the three-month test phase, qualified coaches offered two training sessions per day from Monday to Thursday. Notices posted at the trails advertised the supervised training times. Instructors were people who worked in the field of fitness and exercise or with senior citizens. Those exercising greatly valued the regular contact with the qualified and competent trainers.

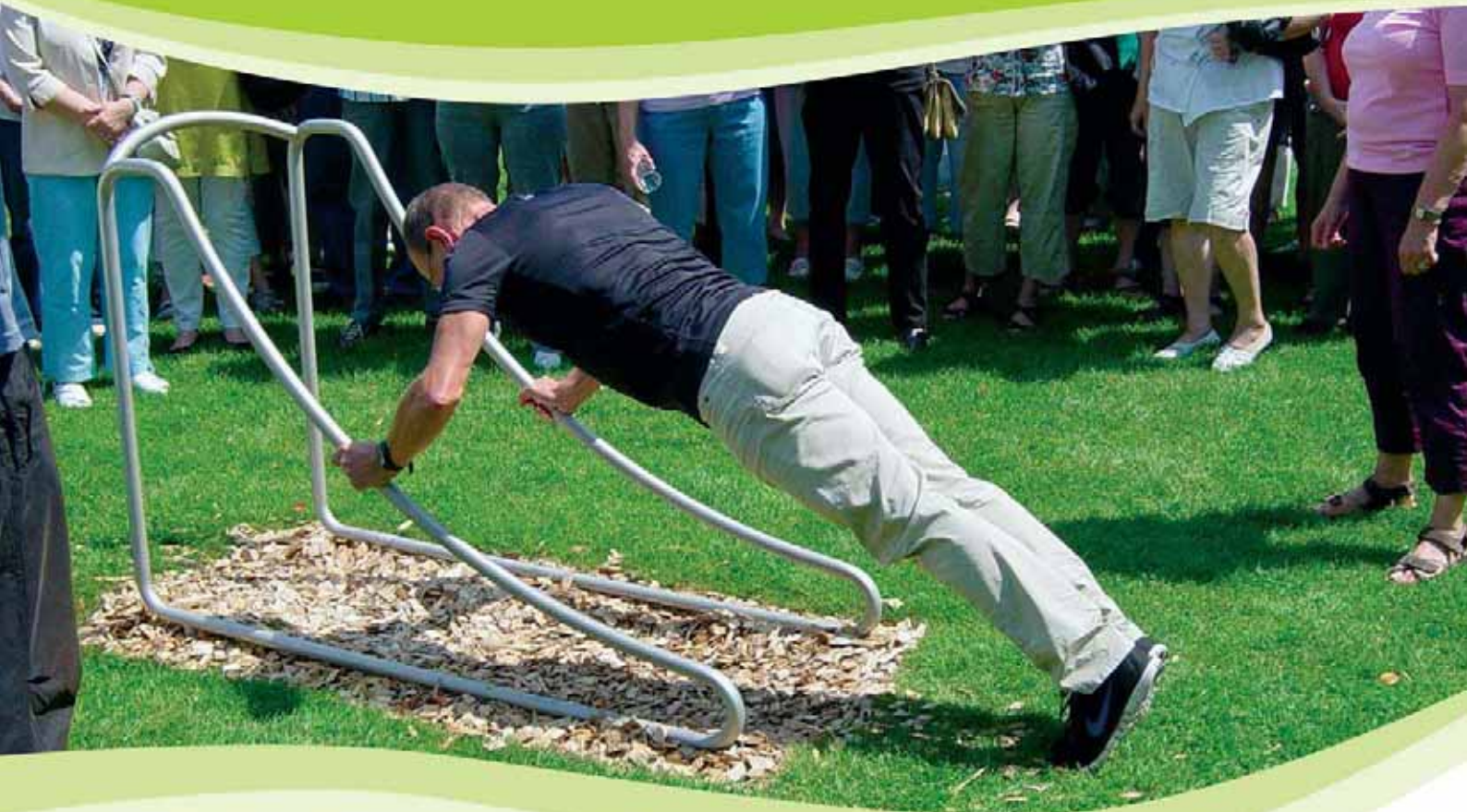
Remuneration for the trainers was based on amounts paid in other sport-related projects in Darmstadt and was at a level typical for sports clubs in the vicinity.

Trainers produced a short record of each training session, which was then also used as a basis for remuneration. After six weeks, a "half-time discussion" was held with the trainers. In cooperation with the Hesse Regional Sports Federation and its subdivisions, the plan is to develop specific qualification modules for people supervising the fitness trail.

Outlook: Fitness trail as a regular meeting point and exercise location

The huge use made of the fitness trail in Darmstadt has prompted the town to continue it in the future with special programmes. The responsibility is to pass from the town to sports clubs and users.

- Responsibility for the supervised training sessions should pass to the Darmstadt- Dieburg sports association. This will allow the creation of a system for subsidising the trainers' work.
- "Exercise guides" are designed to give people who do little or no sport a supervised and targeted introduction to the use of the trail.
- For subsequent use, the intention is to develop a system of season tickets.
10-session tickets would entitle the holder to participate in a supervised exercise session.
A price of 20.00 Euro is initially envisaged for a 10-session ticket.
- Holders of senior citizens' cards and people who can prove they have a valid membership in a sports club receive a discount, ensuring that no one is excluded from use of the trail.
- The 10-session tickets are made available by the town.
- One hour as a supervised training session is remunerated.
- Any shortfalls are to be made up through subsidies, donations or other third-party funds.
- The Department for Sport, the Department for Social Affairs and Prevention, and the Sports Association are in regular contact with the trainers to make sure that plans progress in a useful and sustainable way.
- Regular "reflection sessions" with the organisations involved also involve participants.



Financing

How much does a fitness trail cost?

Costs for a fitness trail may vary considerably. Investment costs arise from the planning of the trail, the equipment itself and the installation of the machines. In addition, there are follow-up costs from servicing and maintenance.

Planning costs are dependent on whether a local authority parks and gardens department or department of planning and buildings inspection can take on the task or whether a planning company (landscape architects) is commissioned to do so. In the latter case the costs are dependent on the construction volume.

The costs for the trail itself are dependent on the nature and number of machines. The costs of the individual fitness machines are between 1,500 und 6,000 euros. The second cost factor is the installation of the equipment. Normally, the setting-up of a fitness

trail is put out to tender by parks and gardens departments or departments of planning and buildings inspection, and carried out by gardening and landscaping companies; some local authorities, however, have their own building yards. There are assembly instructions from the manufacturers for the assembly and installation of individual machines.

Co-funding

Local public authority and regional finances are overstretched. To enable the public authorities to still do their job effectively, it is desirable to try to form public-private partnerships, particularly when setting up fitness trails. The short-term and medium-term advantages of health-promoting activities with a widespread impact are obvious; the prevention of age-related diseases, such as heart attacks and diabetes is at the forefront when it comes to such exercise opportunities.

The morbidity rate for Type 2 diabetes, e. g. acquired or adult-onset diabetes, significantly increases with age. Among the age 75-plus groups, the rate is as much as 25%. Targeted prevention programmes focusing on exercise and nutrition, however, can prevent it. Type 2 diabetes is one of the most common, and in terms of its consequences, most expensive chronic illnesses in the state of Hesse. Not only do the health insurance funds benefit from a lowering of these costs, but those making contributions to and those insured with statutory health insurance funds also benefit. In the case of fitness trails targeted also at adults in employment, both employers and employees benefit from the health-promoting effects.

Alongside the sponsorship model from Viernheim, Darmstadt's considerations regarding the involvement of users could help alleviate costs.

The "sponsorship model" for financing a trail: Viernheim

The town of Viernheim also set up a fitness trail in 2011, for which it was possible to find a successful financing model.

As part of a medium- and long-term project involving conversion of the existing sports area in the west into a "Familiensportpark West [Family Sports Park West]", the intention was that special attention be given to demographic developments and multi-generational opportunities. The town decided to set up a multi-generational fitness trail.

As it became apparent that the town was unlikely to be able to fully finance the "multi-generational" fitness trail, another source of finance was chosen: machine sponsorship.

The following was decided upon:

- The town of Viernheim assumes 1/3 of the costs, if the remaining 2/3 can be financed through donations.
- The project will only be implemented when the whole trail is financed.

To determine the price of an individual machine, the total costs of the trail (machines, signage and assembly) were divided between the individual machines so as to be able to work with a total machine price.

Potential donors were in most cases contacted personally, or first notified by phone or in writing by the mayor and then contacted personally by the planning department. A presentation about the concept of a fitness trail, which showed pictures of the 14 planned machine stations, served as a "sales catalogue".

Within two months it was possible to find sponsors for all 14 stations. A total of 13 sponsors are funding the 14 machines; they consist of corporate organisations, one-man companies, trusts and sports clubs. Donors are then acknowledged by their company logo being printed onto the sign of the machine they have financed.

In addition to this, a local landscaping and gardening business made a donation in kind, providing the requisite safety surfaces for two machines and also woodchip surfaces around all the machines.

Appendix

Checklist

- 1 Target group: for what target group should a trail be created?
- 2 Involvement / participation:
Which groups, stakeholders, sponsors should be involved in the planning process?
- 3 Situation: central location
- 4 quiet, nuisance-free location
- 5 good accessibility, free from obstacles, and good connections (footpath and cycle network, local public transport)
- 6 Location within the park or area of open space: socially controlled, not "on display"
- 7 Selection of machines to fit the target group
- 8 Where the target group is older adults, it makes sense to have sufficient children's playgrounds nearby, but not in the direct vicinity
- 9 Attractiveness: sufficient number of machines, useful training sessions, good signage
- 10 Facilities: places to put things on, seats for taking a break (no spectators' benches!)
- 11 Additional facilities: lighting, where appropriate a drinking fountain, public toilets nearby
- 12 Is it possible to have regular guided training sessions or introductory sessions led by specialist staff (sports clubs, adult education centres, physiotherapists, etc.)?
- 13 Securing financing
- 14 Information: how do citizens find out about the trail, and where appropriate, the guided training sessions?

Overview of exercise equipment in open-air facilities in Hesse

Town	Location	Town	Location
Bad Emstal	Kurpark [spa gardens]	Hattersheim	Youth Centre
Bad Hersfeld	Kurpark [spa gardens]	Heusenstamm	Königsberger Straße
Bad Nauheim	Gesundheitsgarten [health garden]	Hofheim	Elisabethen-Schule [Elisabethen school]
Bad Orb	Kurpark [spa gardens]	Hofheim	Municipal building yard
Bad Schwalbach	Therapiegarten [therapy garden], Martha-von-Opel-Weg 34a	Kassel	Brückenhofstraße 62–68
Bad Soden-Salmünster	Kurpark [spa gardens]	Kassel	Goethe park
Baunatal-Altbauna	Municipal park	Kriftel	Leisure park
Bebra		Kronberg	Alt-König-Stift-park, Feldbergstraße
Buseck	Palace grounds, Beuerner Weg	Lampertheim	Bidensand Bäder, Rheinstraße 90
Darmstadt	Municipal park north	Lampertheim	Municipal park, Martin-Köscher-Straße
Dieburg	Am Spießfeld leisure centre	Lauterbach	Playground in the Hohhausgarten
Dietzenbach	Marktstraße	Limburg	Municipal park retirement home, Breites Driesch 34
Egelsbach	"Im Brühl" old people's home	Lindenfels-Winterkasten	Eleonoren Clinic
Eichenzell	AWO centre, Am Riedrain 9	Lohfelden	Lohfelden service area
Eiterfeld	"Auf der Asch" multi-generational playground	Lohfelden	Grüne Mitte leisure park
Eschborn	"Rheinstraße" playground	Lollar	Cooperative Building Association, Giesstraße
Eschborn	"South-west park" playground, Am Sportfeld	Marburg	Auf der Weide / Frankfurter Straße
Frankfurt	Atzelbergstraße 19–27	Neu-Anspach	Pro Schwimmbad e.V., Breite Straße 12
Frankfurt	Budge foundation senior citizens' apartments, Wilhelmshöhe 279	Neu-Isenburg	Sports park
Frankfurt	Elli-Lucht park	Neustadt / Hessen	Municipal park, Beethovenstraße 6
Frankfurt	Huth park	Offenbach	Emil-Renk-Haus
Frankfurt	Lenzenbergstraße children's playground	Philippsthal	Palace garden
Frankfurt	Nidda park	Pohlheim	Gießener Straße 102
Frankfurt	Rose-Schlösinger park, Am Ratsweg	Rotenburg a.d.Fulda- District of Lisenhausen	Children's playground
Frankfurt	Schwanheim forest playground	Stadtallendorf	Niederkleiner Straße / Eggerländer Straße
Frankfurt	Werner-von-Siemens school, Gutleutstraße 333	Stadtallendorf	Multi-generational playground, Dresdener Straße
Frankfurt	JVA III	Sulzbach / Taunus	Municipal park
Friedberg	Luther park	Viernheim	Multi-generational fitness trail
Friedberg	Private sensory garden in the allotment grounds	Viernheim	Social centre, Industriestraße 30
Gießen	Schulz-Stiftung [Schulz foundation]	Wächtersbach	Palace grounds
Grasellenbach	"Leben am Wald" residential home	Wiesbaden	Klarenthal senior citizens' housing complex
Groß Biebräu	Im Briebel leisure park	Wiesbaden	Schierstein multi-generational park
Hanau	Kneipp park, Hindemithstraße 38	Witzenhausen	Playground in municipal park
Hanau	Palace garden		

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