speed training

speed training

- supraliminal stimulation with optimal acceleration and speed of up to 45 km/h
- safe training thanks to the safety arch, wide running surface and short handrails
- ideal knee lift thanks to the special crossbar handrail and 25% inclination

speed training

faster through specific training in a speedlab®

- **speed training on a treadmill?**
- **improved knee lift and better tensile behaviour?**
- **safer sprints and over-speed training on a treadmill – but how?**

performance for more speed

In nearly all performance sports speed and elasticity have become more important in recent years. The faster sportsmen have a definite advantage. A treadmill system can make a crucial improvement to speed training – subject to certain essential requirements and the application of the latest methodology.

For sports such as American Football, Rugby, Football or Handball speeds of up to 40 km/h and more are necessary. These speeds need to be reached on a treadmill with sportsmen who sometimes weigh more than 100 kg. For that a treadmill needs power apart from anything else. Comparable with industrial machinery or electric ovens and many other types of equipment the standard 230 Volt / 16 Amp power supply doesn't provide enough power and a 3 phase supply with 3 x 400 Volt is necessary. This avoids unwanted speed reduction or even automatic shut downs due to overload.

Speeds of 40 km/h (optionally 45 km/h) and programmable acceleration levels together with many other functions and design details make the h/p/cosmos pulsar® 3p with its 3 phase power supply unique, particularly for speed training. The drive system allows even heavy sportsman to reach speeds of over 40 km/h within a few seconds and thus creates the ideal conditions for effective speed training. But this has to be approached carefully. Firstly the 100% performance limit needs to be established so that the training stimulus can be set to between 101 and 105%. Additionally unweighting through a vest system or holding on to the handrails may be used.

Overloading can cause injury or even negative training results and must be avoided at all costs. Know how of the correct systematic and meticulous documentation is essential. h/p/cosmos® offers various expandable configurations of a SpeedLab®. We support you not just in the selection of the hardware but also in the methodology, analysis and documentation with the support from experts from the fields of speed training, flexibility training and functional training.

only safe training can be effective!

A formular 1 driver can only drive on the limit when he knows that both his car and the track are as safe as possible. Without the safety cocpit and helmet it is unlikely that he would reach the same level of performance. It's similar for speed training. A sportsman who feels insecure and is worried that he may fall will not train to the limit and certainly won't train over the threshold. It would also be irresponsible for the trainers and diagnosticians to expose an athlete to the dangers of a fall at high speeds. Under maximum demand on the 100% performance limit lack of coordination or even stunbling may occur.

Therefore h/p/cosmos® offers a complete package of safety measures for speed training. The safety arch that doesn't just prevent falling in case of tripping but also brings the running belt automatically to a complete stop through the quick-stop system. The solid steel foot board on the left hand side has been widened for speed training and has both an anti-slip surface and clear hazard makings. This allows the sportsman to jump on and of from the treadmill safely, if necessary. In addition the left hand handrail has been shortened to prevent impact injuries to the hip and a hand grip has been added "just where you need it". Often the treadmill will be jumped on to first when it is running at 36 km/h then accelerated within a few seconds to 40 km/h or more. The right ergonomic design and methodoligy is necessary to achieve the best results. The athletes can therefore train safely upto thier individual limits.

over-frequency training for more speed

Particularly during the introduction to higher speeds over-frequency training with unweighting is a good, new and high intensity training stimulus.

For effective over-frequency training h/p/cosmos® offers a range of possibilities. The special crossbar developed for sped training is the quickest and easiest form of unweighting and allows full concentration on the footwork. In case that arms also need to used during over-frequency training the h/p/cosmos airwalk® offers the ideal solution with its single point dynamic suspension givinging total freedom of movement, even for side stepping and backwards running.

improved knee lift through 25% elevation and the special removable crossbar handrail

A common training goal in speed training is the improved knee lift. To facilitate this the treadmill must have sufficient elevation while allowing over-frequency training through unweighting.
The specially developed speed training crossbar allows quick and easy unweighting. At the same time the curved design allows the sportsman ample leg room. Because of the elevation of up to 25% the sportsman is forced to actively bring his foot forwards and upwards. Thus the knee lift is enhanced and optimised. The 3 x 400 Volt 3 phase power supply is also necessary in this situation, many treadmills that only have a 230 Volt supply would shut down due to overload or be subject to unacceptable speed variations.

the future included

The speed training treadmill solution based on the h/p/cosmos pulsar® 3p allows you many additional future possibilities.

You want to run performance diagnostics as well? With up to 3 communication ports the h/p/cosmos pulsar® 3p will fulfil all your needs. In addition to diverse software solutions for performance diagnostics, spiroergometry, or ergometry there are many other compatible hardware and software solutions. Have a look at the compatibility list at www.coscom.org.

h/p/cosmos pulsar® 3p, the right choice for now and the future.

For functional training the pulsar® 3p can be retrofitted with the robowalk® expander-system, too. Videos can be found on youtube.com/hpcosmos.

documented success motivates!

Success motivates. Particularly when it is well documented.

As soon as the training session has been completed the laser printer connected to the treadmill prints an informative report. This allows quick and simple documentation of the training results. When a digital record is necessary the h/p/cosmos para graphics® software allows storage of the training results on a PC. In addition the load and step profiles can be controlled from the PC and displayed or even exported in other data formats for further processing in a spread sheet.

improved tensile behaviour

In addition strengthening the knee lift the treadmill is also well suited to improving the tensile behaviour. Results form the field indicate that this may offer significant improvements particularly for team sports.

Since the treadmill pulls the foot back during over-frequency training it is necessary for the sportsman must bring his foot quickly and actively forwards. Thus the tensile relations during functional movements are trained and improved.
A current series of tests are being run to determine what role the new robowalk® expander system, originally developed for locomotion therapy for neurological patients, may also play for application in speed training and flexibility training for improved tensile behaviour. Not infrequently the methods and equipment used in athletic training and in neurological rehabilitation of stroke patients are the same, it's only the speeds and loads which are dramatically different.

system solution speed training

recommended configuration speed training h/p/cosmos pulsar® 3p

pos.	qty.	order number	product description
1.	1	cos30004va04	**running machine h/p/cosmos pulsar 3p** running surface 190 x 65 cm, Speed 0 ... 40 km/h, Elevation -25 ... +25 %, Drive motor 4.3 kW with high-performance 3-phase power supply, 2 interface ports com1/ com2 for PC-, ECG, Ergospirometry-, Blood pressure system or printer - compatible to almost of the systems worldwide, incl. PC software h/p/cosmos para graphics for device control and visualisation „
2.	1	cos10159	special speed 0 ... 45 km/h / 0 ....12,5 m/s
3.	1	cos15133-02	handrail crossbar „speed“, in front
4.	1	cos14763-01	handrail „speed“ included handhold, left hand side (surcharge)
5.	3	cos14764	footboard „speed“ for safe jumping on and off the moving running belt, extra width
6.	1	cos10170	safety arch with harness, fallstop, chest belt + autom. running belt stop. CE mark for 200kg
7.	1	cos14903-03-L	chestbelt system L for safety arch harness
8.	1	cos14903-03-M	chestbelt system M for safety arch harness
9.	1	cos14903-03-S	chestbelt system S for safety arch harness
10.	1	cos10670-01	spare rope for safety arch
11.	1	cos13476-01	DELL Laptop Computer
12.	2	cos12769-01	interface adapter USB / RS232
13.	1	cos00097010035	interface connection cable RS232 10 m
14.	1	cos30022va02	h/p/cosmos robowalk® expander F (front)
15.	1	cos30023va02	h/p/cosmos robowalk® expander B (back)
16.	1	cos101050-S	tight cuff, robowalk expander, size S
17.	1	cos101050-L	tight cuff, robowalk expander, size L
18.	1	cos10177	packed part assembled on pallet with carton hood, width 65 cm with safety arch
19.	1	cos101341	1 full day workshop treadmill applications in speed & agility
			total price net, excluding VAT, excluding custom duties
			VAT (19 % in Germany, other VAT and/or custom duties may apply in other countries)
			system price h/p/cosmos solution for speed training: **please ask your dealer for a quotation**

specifications h/p/cosmos pulsar® 3p

running machine:	h/p/cosmos pulsar® 3p
order number:	cos30004va04
applications:	running for sports, sports medicine, cardiology, rehabilitation, stress tests & medicine WITH UserTerminal (display & keyboard), MCU5. stand alone or remote control via interface.
running surface:	L: 190 cm (74.80“) W: 65 cm (25.59“) access Height: 23 cm (9.06“) - shock load reduction for the joints - belt surface with non slip material - max. permissible load: 200 kg (440 lbs)
speed range:	0...40.0 km/h (0...11.1 m/s) (0...24.8 mph) special speed up to 45 km/h (27.9 mph) on request.
acceleration:	7 levels (3...131 sec. from 0 to max. speed) from 0.085... 3.704 m/sec² programmable via para control; also for deceleration (for manual or program mode)
elevation:	-25...+25 % (-14...+14.0°) adjustable electr., resolution 0.1 % (-25 %...+25 % when using reverse belt rotation)
running direction:	switch for reversing running belt direction, running belt must be adjusted for reverse belt rotation. Max. permissible speed without a safety-harness with fall-stop prevention system is 5 km/h.
motor system:	4.3 kW (5.8 HP) 3-phase A.C. motor (maintenance free and brushless 20 years warranty on main drive motor)
power transmission:	frequency inverter, Poly-V-Belt, very quiet operation
safety: CE 0123	CE0123; directive 93/42/EEC + 2007/47/EC; MDD; machinery directive 2006/42/EC; EN 60601-1; EN 60601-1-1; EN 60601-1-2 (EMC approved); EN 60601-1-4; EN 60601-1-6; EN 62304; EN 62353; EN 957-1; EN 957-6; EN 14971 ISO 9001; EN ISO 13485; emergency-off switch (mains off), potential equalisation bolt, transformer for potential-isolation from the mains,
degree of protection:	class I / type B / IP 20
classification:	IIb medical device / S, I, A (EN 957)
leakage current:	0,25 mA
ambient condition:	+10...+40 °C (-30...+50 °C on request) 30...70 % humidity (up to 100 % on request) 700...1060 hPa barometric pressure 3000 m (~10000 ft) max. altitude without pressurization
data (resolutions):	6 LCD displays, 4 LEDs for operation modes, 20 LEDs for display of units & profile no, steps, etc. speed (0.1 km/h or m/sec or m/min or mph), time (00:00) in hours, minutes & seconds, elevation (0.1% or degrees) distance (1 meter...999.9 km or miles), METS (1 MET) program step/number, energy (1 kJ/kcal), fitness index (1) power (1 Watt), heart rate (1 bpm / beat per minute)
heart rate monitoring:	POLAR wireless, 1 channel receiver ECG-accurate measurement and display beat-to-beat; automatic control of speed and elevation according to programmed target heart rate („cardio mode“)
digital interface:	2 x RS 232 com1/com2 with 115200/9600 bps: incl.PC-protocol, h/p/cosmos coscom® & printer protocol for serial printer, option at extra charge: USB-RS232-Converter com3 with 115.200 bps; com4.
programs:	42 programs / profiles -6 exercise profiles (scalable, 756 variations) -28 test profiles (UKK 2 km Walktest, Bruce, Graded Test, Naughton, Ellestad, Gardner, Conconi etc.) -8 free definable programs with 40 program steps
free PC software:	h/p/cosmos para control® for display & remote control, h/p/cosmos para graphics® for recording & visualization, inclusive 2 x RS232 interface cable (1 x 5 m (16 ft 4.85“)), 1 x 10 m (32 ft 9.70“)).
software (at extra charge):	h/p/cosmos para analysis® & h/p/cosmos para motion®. PC software for monitoring, recording & motion analysis.
free accessories:	user manual, 2 bottle holders and 10 h/p/cosmos 0.5 l drinking bottles, service box incl. special oil, 5 m (16 ft 4.85“) PE-cable
colour of frame:	grey aluminium RAL 9007 (powder coated); other colours on request.
handrails:	steel tube handrails 60 mm (2.36“) diameter on both sides, front-handrail crossbar (removable) 36 mm diameter, optional other handrail designs at extra charge.
voltage supply:	400 Volt AC 3~/N/PE 50/60 Hz 15A fuse breaker, dedicated line, special voltage supply available on request.
size of frame:	L: 250 cm (98,42“) B: 105 cm (41,34“) H: 145 cm (57,08“)
net weight:	approx. 440 kg (968 lbs)
gross weight:	approx. 590...640 kg (1298...1408 lbs)

Optionally available at extra charge: Special frame colours, other handrail designs, special specifications, special voltage supply, special deck sizes and accessories. Weight and package specifications can deviate according to options, accessories and packing.

E&OE. Subject to alterations without prior notice.

Performance limitations:
Please consider the natural and physical performance limitations of the single phase 230 volt voltage power supply. The single phase 230 volt voltage power supply is sufficient up to normal fitness performance diagnostics, but is not sufficient for all special high performance applications (uphill/downhill, speed running, controlled jump-ons, sidesteps, heavy subjects at higher speed etc.). 3-phase running machine models with 3x400 volts power supply (for example model pulsar® 3p, venus® or saturn®) are recommended for high performance applications.

Warning!
Installation, commissioning, instruction and maintenance only to be conducted by h/p/cosmos trained and authorized personnel. For running surfaces with 200x75cm or bigger, special applications, at higher speeds or for subjects with higher risk of falling, or if there is not enough safety space behind the treadmill, a fall prevention system (e.g. safety arch with harness & chest belt) is obligatory.

Keep min. L: 2 m (78.74“) x W: 1 m (39.37“) safety space behind treadmills!

No children on or near to treadmills.