

## 14.2 Benefits

Benefits of VACU Group devices are as follows:

1. Stimulation of the circulation in the lower body		
No.	Outcome	Ref.
1	<u>VACUMED both increases blood flow and microcirculation in the lower extremities:</u>	(36)-(48)
2	<u>VACUMED has been successfully used in patients with pAVK:</u>	(37);(38);(33); (45);(48)-(56)
3	VACUMED is suitable to reduce the periphyseal underperfusion in pAVD (I - IV Fontaine) and increase walking distance.*	(38);(49);(45)
4	VACUMED increases the oxygen content in the blood in case of insufficient O2 saturation (up to 750%).	(37);(33);(53);(55)
5	VACUMED has been successfully used in patients with arterial diseases, including RLS (Restless-Legs-Syndrom).	(36)
6	VACUMED helps to revascularize when all other therapies have been exhausted.	(57)
7	<u>VACUMED can be used in patients with critical ischemia:</u>  VACUMED device leads to a significant improvement of perfusion in out-of-therapy patients with critical ischemia, which has been proven by oxygen pressure measurements (TcPO2).	(58);(33)
8	<u>VACUMED can be used in patients with CVI / CVU (chronic venous insufficiency/ulceration):</u>  VACUMED describes to affect physical rhythmic vasodilation, which physiologically leads to better blood flow in the periphery as well as an increase in venous and lymphatic outflow.	(58);(59)
9	<u>VACUMED can be used in patients with typical angiological, phlebological and lymphatic vascular pathologies:</u>  VACUMED was successfully applied to 15 pain patients with typical angiological, phlebological and lymphatic vascular pathologies. There were initiations or acceleration of wound healing, reduction of edema volumes, extension of walking distance and reduction of pain.	(54)
10	<u>VACUMED can be used in patients with peripheral microcirculatory disorders:</u>  VACUMED device is indicated for peripheral microcirculatory disorders, e.g. diabetes, angiopathy, Raynaud's disease or thrombangitis obliterans.	(55)
11	<u>VACUMED can be used in patients with cellulitis:</u>	(60)

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	<p>VACUMED was developed for the treatment and prophylaxis of peripheral circulatory disorders and cellulitis by DLR as a space project (STS-90 NEUROLAB) and built by Weyergans.</p> <p>VACUMED is effective in the area of cellulite, which is essentially a local lymphatic circulation disorder. Biometrologically, a decrease in external skin features and skin dryness can be observed, as well as an increase in skin tone and firmness, which indicates an improvement in the performance of the physiological muscle pump.</p>	(86)
<b>2. Removal of venous and lymph dependent waste products</b>		
No.	Outcome	Ref.
12	<u>VACUMED can be used post-operatively and improves both microperfusion and venous and lymphatic return in the lower extremities:</u>	(32);(36);(39)-(41); (43);(48);(54);(62)- (64)
13	VACUMED can help reduce edema, with success rate of up to 90%.	(32);(36);(39);(54); (59);(62);(64)-(66)
14	VACUMED assists in the preparation of microsurgical LVA (Lymphatic – Venous Anastomoses) and LVLA (Lymphatic – Venous – Lymphatic Anastomoses) constructions and can also be used for early postoperative care and long-term rehabilitation of lymphedema patients.	(66)
15	The rapid decrease in lactate concentration, which is a lymphatic load, is the result of VACUSPORT-induced blood flow and lymphatic drainage promotion.	(63)
<b>3. Wound management</b>		
No.	Outcome	Ref.
16	<u>VACUMED significantly initiates and accelerates wound healing:</u>	(42)- (44);(33);(35);(36); (47);(54);(57);(59)
17	VACUMED heal wounds in stage III and IV CVI beyond standard medication and has a positive effect on patients' underlying depressed mood.	(59)
18	VACUMED has been successful used in patients with venous and arterial chronic wounds (including DFS).	(36)
19	VACUMED device is evident in patients with DFS and can reduce the number of amputations.	(37);(36);(33);(47);(57)
20	VACUMED shows a very good effect on wound healing even in elderly and multi-morbid patients with diabetic foot syndrome and critical ischemia.	(33)

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21	<i>Strikingly, the greater the muscle injury and associated edema, the faster the wound healing acceleration.</i>	(35)
<b>4. Regeneration after training/sport activities, injuries</b>		
No.	Outcomes	Ref.
22	<u>VACUMED has a lymph drainage enhancing effect and can be used for faster recovery of athletes after peak performance*.</u>	(67)-(70);(34);(35); (40);(41);(46);(63);(64)
23	<i>increased motivation as well as the subjective well-being of the athletes.</i>	(69)
24	<i>significant reduction of RTT/RTP (return to training and return to play) time: range between 25 and 86%.</i>	(34); (64)
25	<i>measurable benefits in the areas of stretching, muscle pain, stress and sleep score, in contrast to the comparison group.</i>	(67)
26	<i>rapid reduction of blood lactates and thus contributes to accelerated regeneration.</i>	(63)
27	<i>Serum CK level and lower extremity skin temperature showed better recovery up to 24 h after intervention with VACUSPORT than compared to standard active regeneration training in elite soccer players.</i>	(42)
<b>5. Quality of life</b>		
No.	Outcomes	Ref.
28	<u>VACUMED has a positive effect on general well-being:</u>	(36);(43);(44);(31)
29	<i>Most patients experience an improvement of their complaints.</i>	(74)
30	<i>VACUMED does also have a euphoric, mental effect and eliminated the depression due the disease.</i>	(59)
31	<u>VACUMED increase stress tolerance.</u>	(43)
32	<u>VACUMED can reduce pain in patients:</u>	(36);(43);(44);(54)
33	<i>Of note is the application of VACUMED in FBSS (Failed Back Surgery Syndrome) and discogenic pain syndrome, although the causes of the pain are outside the treatment area, lower body.</i>	(36)
34	<i>VACUMED was successfully applied to 15 pain patients with typical angiological, phlebological and lymphatic vascular pathologies.</i>	(54)
35	<i>VACUMED reduce pain in pAVK patients due to improvement of micro- and macroperfusion.</i>	(48)

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6. Other		
No.	Outcomes	Ref.
36	<u>VACUMED can be cost-effective:</u> VACUMED avoid further hospitalizations / disablements in a cost effective way.	(57)
37	<u>VACUMED can be applied on an outpatient basis.</u>	(56)
38	<u>VACUMED can save time for professionals and decrease manual labour.</u>	(44)
39	<u>VACUMED is well-tolerated:</u>	(49); (50);(44);(61)
40	VACUSPORT (VACUMED) is well tolerated by patients (including elderly).	(49);(44);(61)
41	VACUSPORT (VACUMED) are well tolerated even in underlying cardiological diseases and fresh postoperative conditions.	(50)
42	<u>VACUMED has an effect on the SNS (sympathic nervous system):</u> VACUSPORT (VACUMED) influence on SNS and endothelial function is shown. Central hemodynamics are altered by VACUSPORT, as evidenced by an increase in epinephrine levels and retrograde shear rate. VACUMED exerts shear forces that stimulate central nervous system and thus endothelial function.  Central hemodynamics are altered by VACUSPORT, as evidenced by an increase in epinephrine levels and retrograde shear rate. The study demonstrates that VACUMED exerts shear forces that stimulate central nervous system and thus endothelial function.	(71)
43	<u>VACUMED has an effect on patients with chronic pelvic inflammatory diseases and infertility:</u> VACUMED leads to the restoration of ovulatory menstrual cycles, reduction of the severity of premenstrual syndrome and may contribute to the onset of a desired pregnancy.	(72)
44	<u>VACUMED offers new perspectives in the treatment of:</u> - Erectile dysfunction due to atherosclerosis.	(58)
45	- IVT-induced release of Nitrogen monoxide (NO). It is neither absurd nor excluded: NO plays a significant role in vasodilation and is considered an important factor when considering general health.	(73)