Supplemental Material

Table S1. **Adverse events of the index cohort.**

Adverse events	All (30)	Iliac (15)	Fempop. (10)	Diagnostic (5)
Peripheral embolization (%)	0 (0)	0 (0)	0 (0)	0 (0)
Hematoma (%)	2 (7)	1 (7)	1 (10)	0 (0)
Pseudaneurysm (%)	0 (0)	0 (0)	0 (0)	0 (0)
Other (%)	0 (0)	0 (0)	0 (0)	0 (0)
Death (%)	0 (0)	0 (0)	0 (0)	0 (0)
Study limb amputation (%)	0 (0)	0 (0)	0 (0)	0 (0)
Severe adverse events (%)	0 (0)	0 (0)	0 (0)	0 (0)
MALE				
Lower extremity bypass (%)	0 (0)	0 (0)	0 (0)	0 (0)
Amputation (%)	0 (0)	0 (0)	0 (0)	0 (0)

MALE = major adverse limb events; Fempop. = femoropopliteal; BTK = below the knee

Table S2. **Overview of intraprocedural endpoints in the index cohort.** Segmental, serial, invasive aortic blood pressure (aBP) measurements and brachial blood pressure (bBP) measurements before and after endovascular treatment. Mean systolic aBP (A), mean diastolic aBP (B) as measured at baseline before iliac (n=15) or femoropopliteal angioplasty (n=10) or mere diagnostic angiography (n=5). Changes in systolic bBP (C), diastolic bBP (D) and heart rate (E, HR) at baseline before and after angiography or angioplasty measured in the catheter laboratory.

A	systolic aBP baseline		systolic aBP post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	173	4	149	4	-24	-27	-21	<0.0001
Fempop. angioplasty	164	5	153	5	-11	-14	-8	<0.0001
Diagnostic angiography	157	4	158	5	1	-1	3	0.22

B	diastolic aBP baseline		diastolic aBP post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	74	1	66	1	-8	-9	-6	<0.0001
Femoropop. angioplasty	76	2	72	2	-4	-6	-3	<0.0001
Diagnostic angiography	70	2	71	2	1	0	2	0.6

C	systolic bBP baseline		systolic bBP post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	177	5	156	5	-21	-25	-17	<0.0001
Femoropop. angioplasty	166	8	156	8	-10	-13	-6	<0.0001
Diagnostic angiography	155	8	156	8	1	-2	4	0.5

D	diastolic bBP baseline		diastolic bBP post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	72	2	66	3	-6	-9	-3	0.0001
Femoropop. angioplasty	74	4	70	3	-4	-7	-1	0.02
Diagnostic angiography	69	4	69	4	0	-5	6	0.8

E	HR baseline		HR post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	75	3	76	2	1	-0.5	4	0.13
Femoropop. angioplasty	77	4	76	4	-1	-2	2	0.9
Diagnostic angiography	70	4	70	3	0	-4	5	0.8

Table S3. Aortic (aBP) and brachial blood pressure (bBP) lowering effect of iliac (n=15) and femoral angioplasty (n=10) in the index cohort as compared to diagnostic angiography (n=5).

A	systolic aBP			
	mean difference	95% CI		p-value (one-way ANOVA)
Iliac angioplasty vs diagnostic angiography	-25	-30	-20	<0.0001
Fempop. angioplasty vs diagnostic angiography	-12	-17	-5	<0.0001

B	diastolic aBP			
	mean difference	95% CI		p-value (one-way ANOVA)
Iliac angioplasty vs diagnostic angiography	-9	-13	-1	0.01
Fempop. angioplasty vs diagnostic angiography	-5	-10	2	0.2

C	systolic bBP			
	mean difference	95% CI		p-value (one-way ANOVA)
Iliac angioplasty vs diagnostic angiography	-22	-30	-14	<0.0001
Fempop. angioplasty vs diagnostic angiography	-11	-19	-2	0.01

D	diastolic bBP			
	mean difference	95% CI		p-value (one-way ANOVA)
Iliac angioplasty vs diagnostic angiography	-6	-13	-1	0.02
Fempop. angioplasty vs diagnostic angiography	-4	-11	2	0.2

Table S4. **Physicomechanical endpoints in the index cohort.** (A) Aortic pulse wave velocity at baseline and after peripheral angioplasty of iliac (n=15) and femoropopliteal (n=10) arteries, as well as mere diagnostic angiography (n=5). (B) Timing of the arrival of the reflected wave (T1) to the aorta, (C) change in AIx before and after endovascular treatment or diagnostic angiography.

A	PWV baseline (m/s)		PWV post (m/s)		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	15.4	0.5	15.2	0.5	-0.3	-0.4	0.1	0.07
Fempop. angioplasty	14.3	0.7	14	0.7	-0.3	-0.7	0.3	0.5
Diagnostic angiography	14.4	1	14.4	0.8	0	-1	1	0.96

B	T1 baseline (ms)		T1 post (ms)		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	103	4	105	3	-2	-1	5	0.1
Fempop. angioplasty	106	4	107	4	-1	-2	4	0.4
Diagnostic angiography	106	2	106	2	0	-5	6	0.8

C	AIx baseline (%)		AIx post (%)		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	27	2.8	15	2.2	-12	-13.9	-9.6	<0.0001
Fempop. angioplasty	19	2.5	14	2	-5	-7.4	-2.5	0.0013
Diagnostic angiography	18	3.4	18	3.2	0	-0.6	1	0.6

Table S5. Office measurements in the index cohort. Changes in systolic brachial blood pressure (systolic bBP, A) and diastolic brachial blood pressure (diastolic bBP, B), common femoral artery (CFA) blood flow of the target (C) and contralateral leg (D), heart rate (HR, E) and CFA resistance of the target (F) and contralateral leg (G) at baseline one day before and one day after angiography or angioplasty.

A	systolic bBP baseline		systolic bBP post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	174	4	154	5	-20	-25	-16	<0.0001
Femoropop. angioplasty	163	7	153	7	-10	-13	-7	<0.0001
Diagnostic angiography	156	9	157	9	1	-3	5	0.47

B	diastolic bBP baseline		diastolic bBP post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	71	2	65	2	-6	-9	-4	<0.0001
Femoropop. angioplasty	74	4	70	4	-4	-7	-1	0.01
Diagnostic angiography	70	3	71	4	0	-4	5	0.8

C	CFA flow (ml/min) target leg baseline		CFA flow (ml/min) target leg post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	210	39	348	38	138	96	180	<0.0001
Femoropop. angioplasty	314	37	377	36	63	50	75	<0.0001
Diagnostic angiography	301	22	306	29	5	-17	26	0.6

D	CFA flow (ml/min) contralat. leg baseline		CFA flow (ml/min) contralat. leg post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	330	31	327	30	-3	-17	10	0.6
Femoropop. angioplasty	360	45	357	42	-3	-27	21	0.8
Diagnostic angiography	347	38	349	35	2	-18	20	0.8

E	HR baseline		HR post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	77	3	76	3	-1	-3	6	0.6
Femoropop. angioplasty	78	4	76	4	-2	-5	1	0.08
Diagnostic angiography	71	2	69	2	-2	-6	2	0.2

F	Resistance CFA (mmHg*min/l) target leg baseline		Resistance CFA (mmHg*min/l) target leg post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	804	140	326	40	-478	-712	-244	0.0007
Femoropop. angioplasty	379	51	287	33	-92	-134	-50	0.0008
Diagnostic angiography	332	36	335	46	3	-37	43	0.85

G	Resistance CFA (mmHg*min/l) contralateral leg baseline		Resistance CFA (mmHg*min/l) contralateral leg post		Paired difference (post-baseline)			
	mean	SE	mean	SE	Mean	95% CI		p (t-test)
Iliac angioplasty	405	40	380	37	-24	-38	-10	0.0022
Femoropop. angioplasty	335	46	319	49	-16	-41	10	0.19
Diagnostic angiography	295	35	294	35	-1	-17	15	0.84

Table S6. Adverse events of the all-comers registry cohort.

Adverse events	All (381)	Iliac (119)	Fempop. (208)	BTK (39)	Diagnostic (15)
Peripheral embolization (%)	9 (2)	4 (3)	5 (2)	0 (0)	0 (0)
Hematoma (%)	13 (3)	4 (3)	7 (3)	2 (5)	0 (0)
Pseudaneurysm (%)	6 (2)	0 (0)	5 (2)	1 (4)	0 (0)
Other (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Death (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Study limb amputation (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Severe adverse events (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
MALE					
Lower extremity bypass (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Amputation (%)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

MALE = major adverse limb events; Fempop. = femoropopliteal; BTK = below the knee

Table S7. Baseline clinical, demographic and procedural characteristics of the registry cohort compared to the index cohort.

(a) Baseline characteristics	Iliac registry	Iliac index	p	Fempop. registry	Fempop. index	p	Diagnostic registry	Diagnostic index	p
n	119	15	-	208	10	-	15	5	-
Age (yrs)	70 ± 8	69 ± 10	0.66	72 ± 8	74 ± 8	0.35	68 ± 12	68 ± 11	0.99
Male (%)	85 (71)	11 (73)	0.99	160 (77)	7 (70)	0.7	12 (80)	4 (80)	1
Smoker (%)	78 (66)	11 (73)	0.77	114 (55)	6 (60)	0.34	9 (60)	3 (60)	1
Hypertension (%)	106 (89)	15 (100)	1	187 (90)	10 (100)	1	12 (80)	5 (100)	0.54
Hyperlipidemia (%)	100 (84)	12 (80)	0.71	149 (71)	7 (70)	1	12 (80)	4 (80)	1
CAD (%)	81 (68)	12 (80)	0.55	145 (70)	8 (80)	0.73	11 (73)	5 (100)	0.53
Diabetes (%)	40 (34)	6 (40)	0.77	98 (47)	4 (40)	0.75	6 (40)	1 (20)	0.6
Renal failure (%)	40 (34)	6 (40)	0.77	91 (44)	5 (50)	0.75	6 (40)	2 (40)	1
ASS (%)	115 (97)	15 (100)	1	190 (91)	9 (90)	1	13 (87)	4 (80)	1
Clopidogrel (%)	102 (86)	14 (93)	0.7	169 (81)	9 (90)	0.69	6 (40)	2 (40)	1
Statin (%)	96 (81)	13 (87)	0.74	150 (72)	9 (90)	0.29	10 (67)	4 (80)	1
Antihypertensive treatment (%)	108 (90)	15 (100)	0.6	194 (93)	10 (100)	1	15 (100)	5 (100)	1
ACE (%)	70 (59)	12 (80)	0.11	110 (53)	9 (90)	**0.02**	8 (53)	4 (80)	0.6
ARB (%)	30 (25)	3 (20)	0.66	55 (26)	1 (10)	0.46	3 (20)	0 (0)	0.54
CBB (%)	45 (38)	6 (40)	1	71 (34)	3 (30)	1	5 (33)	1 (20)	1
Betablocker (%)	75 (63)	7 (47)	0.79	132 (64)	5 (50)	0.5	7 (47)	3(60)	1
Clinical stage									
Rutherford 2-3 (%)	96 (81)	13 (87)	0.74	112 (54)	6 (60)	0.76	3 (20)	5 (100)	**0.036**
Rutherford 4 (%)	10 (8)	0 (0)	0.6	18 (9)	0 (0)	1	3 (20)	0 (0)	0.54
Rutherford 5-6 (%)	13 (11)	2 (13)	0.68	78 (37)	4 (40)	1	9 (60)	0 (0)	**0.04**
Baseline ABI	0.53 ± 0.11	0.52 ± 0.11	0.7	0.5 ± 0.1	0.53 ± 0.12	0.4	0.51 ± 0.07	0.53 ± 0.03	0.55
(b) Procedural characteristics									
No. of stents									
0 (%)	4 (3)	0 (0)	1	50 (24)	1 (10)	0.45	15 (100)	5 (100)	1
1 (%)	43 (37)	4 (27)	0.57	80 (38)	7 (70)	0.09	0 (0)	0 (0)	na
2 (%)	59 (49)	9 (60)	0.59	57 (27)	1 (10)	0.3	0 (0)	0 (0)	na
>=3 (%)	13 (11)	2 (13)	0.68	21 (10)	1 (10)	1	0 (0)	0 (0)	na
Length of target lesion (mm)	42.0 ± 6	44.0 ± 7	0.23	158.0 ± 51	165.0 ± 67	0.68	210 ± 78	180 ± 80	0.47
Length of stented segment (mm)	44.0 ± 5	46.0 ± 9	0.2	164.0 ± 60	172.0 ± 71	0.7	0 (0)	0 (0)	na
Target vessel diameter (mm)	8.1 ± 0.6	8.4 ± 0.7	0.08	6.2 ± 0.6	6.0 ± 0.9	0.3	6.9 ± 12	6.6 ± 1	0.62
Occlusion (%)	62 (52)	6 (40)	0.38	142 (68)	7 (70)	1	13 (87)	3 (60)	0.2
ABI before discharge	0.92 ± 0.1	0.92 ± 0.07	0.99	0.92 ± 0.12	0.92 ± 0.07	0.99	0.54 ± 0.11	0.54 ± 0.03	0.99

ABI = ankle-brachial index of the target leg, ACE = angiotensin-converting-enzyme inhibitor, ARB = angiotensin receptor blocker, BTK = below the knee, CAD = coronary artery disease, CBB = calcium channel blocker, Fempop. = femoropopliteal. Categorical variables are presented as absolute numbers (n) and percentages (%); statistical comparisons for these were made by the chi-squared test. Continuous variables are expressed as mean values and standard deviation and compared by unpaired t-test. The values presented in the column “p-value” represent the overall difference between two groups; bold font indicates a significant difference between groups ($p<0.05$)

Table S8. Overview of end points in the registry cohort. Systolic brachial blood pressure (A, systolic bBP) and diastolic brachial blood pressure (B, diastolic bBP) at baseline as measured on the day before and post on the day after mere diagnostic angiography of peripheral arteries (n=15) or elective angioplasty of iliac (n=119), femoropopliteal (n=208), and below-the-knee (BTK, n=39) arteries.

A	systolic bBP baseline		systolic bBP post		Paired difference (post-baseline)			
	mean	SE	mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	152	2	133	2	-19	-15	-23	<0.001
Fempop. angioplasty	154	2	143	1	-12	-9	-15	<0.001
BTK angioplasty	143	3	136	3	-7	-1	-14	0.032
Diagnostic angiography	149	3	147	4	-2	2	-6	0.271

B	diastolic bBP baseline		diastolic bBP post		Paired difference (post-baseline)			
	mean	SE	Mean	SE	mean	95% CI		p (t-test)
Iliac angioplasty	77	2	72	2	-5	-2	-9	0.006
Femoropop. angioplasty	77	1	73	1	-4	-1	-6	0.002
BTK angioplasty	77	3	77	3	-1	6	-8	0.849
Diagnostic angiography	78	2	83	9	5	21	-11	0.460

Table S9. Change in brachial blood pressure (bBP) following angioplasty in the registry cohort. Delta office systolic bBP (A) and diastolic bBP (B) after elective angioplasty of iliac (n=119), femoropopliteal (n=208), below-the-knee (BTK, n=39) arteries as compared to delta bBP after diagnostic angiography (n=15).

A	systolic bBP			
	mean difference	95% CI		p-value (one-way ANOVA)
Iliac angioplasty vs diagnostic angiography	-17	-31	-8	0.0005
Fempop. angioplasty vs diagnostic angiography	-10	-23	-1	0.04
BTK vs diagnostic angiography	-5	-5	19	0.34

B	diastolic bBP			
	mean difference	95% CI		p-value (one-way ANOVA)
Iliac angioplasty vs diagnostic angiography	-10	-17	-2	0.01
Fempop. angioplasty vs diagnostic angiography	-9	-15	-0.3	0.04
BTK vs diagnostic angiography	-6	-14	4	0.33

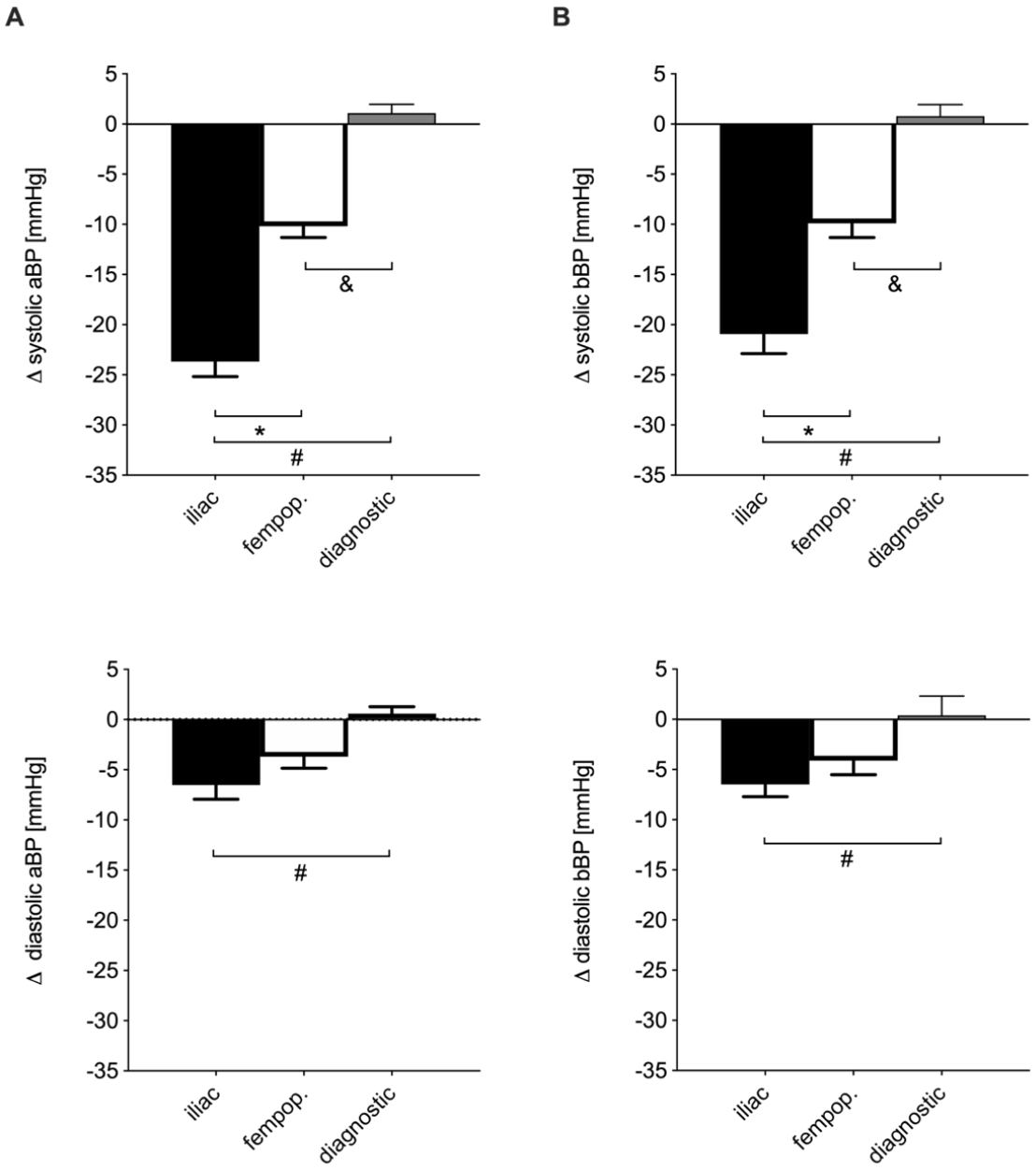
Table S10. Factors associated with change of systolic brachial blood pressure (bBP). Multiple linear regression analysis was performed with comorbidities (age, BMI, CKD, sex, CAD, hypercholesterolemia, smoking, diabetes, hypertension, COPD), hemodynamic characteristics (AIx, PWV, bBP) and localization of the proximal stenosis (iliac vs. femoropopliteal vs. BTK vs diagnostic angiography) as covariates.

Univariate analysis	**Index cohort (n=30)**	**Registry cohort (n=381)**	**All patients (n=411)**
Baseline systolic bBP	r=-0.35; R^2=0.12; p=0.06	r=-0.51; R^2=0.24; **p<0.001**	r=-0.50; R^2=0.25; **p<0.001**
Baseline diastolic bBP	r=-0.19; R^2=0.04; p=0.32	r=-0.23; R^2=0.10; **p<0.001**	r=-0.21; R^2=0.05; **p<0.001**
Baseline AIx	r=-0.39; R^2=0.14; **p=0.04**	n/a	n/a
Baseline PWV	r=-0.22; R^2=0.05; p=0.23	n/a	n/a
Segment of angioplasty			
1 = iliac	1: r=-0.73; R^2=0.53; **p<0.001**	1: r=-0.20; R^2=0.04; **p<0.001**	1: r=-0.22; R^2=0.05; **p<0.001**
2 = fempop + BTK	2: r=0.26; R^2=0.07; p=0.08	2: r=0.14; R^2=0.02; **p=0.004**	2: r=0.14; R^2=0.02; **p=0.002**

Multivariate analysis	**Index cohort (n=30)** R^2 = 0.78, constant =-16,6	**Registry cohort (n=381)** R^2 = 0.31, constant = 62.3	**All patients (n=411)** R^2=0.29, constant = 54,76
Baseline systolic bBP	Beta-Coeff.=0.07; p=0.59	Beta-Coeff.=-0.49; **p<0.001**	Beta-Coeff.=-0.44; **p<0.001**
Baseline diastolic bBP	Beta-Coeff.=-0.16; p=0.21	Beta-Coeff.=-0.01; p=0.80	Beta-Coeff.=-0.04; p=0.43
Baseline AIx	Beta-Coeff.=0.60; p=0.55	n/a	n/a
Baseline PWV	Beta-Coeff.=0.02; p=0.86	n/a	n/a
Segment of angioplasty			
1 = iliac	1: Beta-Coeff.=-1.1; **p<0.0001**	1: Beta-Coeff.=-0.40; **p=0.001**	1: Beta-Coeff.=-0.42; **p<0.001**
2 = fempop + BTK	2: Beta-Coeff.=-0.47; **p=0.003**	2: Beta-Coeff.=-0.20; p=0.09	2: Beta-Coeff.=-0.24; **p=0.03**

bBP = brachial blood pressure; AIx = augmentation index; PWV = pulse wave velocity; Fempop. = femoropopliteal; BTK = below the knee; bold font indicates a significant association with change of systolic bBP (p<0.05).

Figure S1. Aortic (aBP) and brachial blood pressure (bBP) lowering effect of iliac and femoral angioplasty as compared to diagnostic angiography.



Changes of mean systolic/diastolic aBP (A) and mean systolic/diastolic bBP (B) are given in delta BP, data to calculate changes in BP are derived from Figure 2. Bars indicate mean and standard error of the mean. *, & and # indicate significant differences at $p < 0.05$ (one-way ANOVA).