Supplementary material has been published as submitted. It has not been copyedited, or typeset by Jpurnal of Rehabilitation Medicine – Clinical Communications

Appendix A

This decision tree models (DT) pertaining to the six subscores of the Stroke Mobility Score (SMS) are shown in Fig. A1, Fig. A2, Fig. A3, Fig. A4, Fig. A5, and Fig. A6 for the Trunk-, Leg-, Arm-, Speed-, Fluency-, and Stability-SMS, respectively. The tree-structured decision chain allows for a straightforward interpretation of the decision-making process, given a set of stride-pair feature values.

Table AI shows the key features of both the DT and MLP models for all SMS subscores. The second column shows the top 20 features for the MLP models ranked according to permutation importance with 500 repetitions of random shuffling. The third column shows the features used by the DT models, sorted from most to least important in terms of their total contribution in reducing the squared error over all tree splits, and their corresponding MLP-ranking.

Appendix B

While the DT model predicts the SMS very well ($R^2 > 0.8$), two outliers can be seen at an expert-board gait-assessment of 9 (see Fig. 3). In the following, the patient that received an SMS prediction of 2.28 will be referred to as Patient I and the patient with a prediction of 4.37 will be referred to as Patient II.

As shown in Table BI, the Leg-SMS for both patients as well as the Arm-SMS for Patient I were significantly underpredicted. This underprediction can be explained by the outlier gait speeds that both patients exhibit (see Fig. B1), which drove the Leg-SMS and Arm-SMS DT models, already in their first split, to predict low values for the Leg-SMS and the Arm-SMS, respectively (see Fig. A2 and Fig. A3). While DT models offer an enhanced interpretability, they are prone to overfitting.

Appendix C

Fig. C1, Fig. C2, and Fig. C3 show three examples of how a MLP model's prediction could be explained locally using Shapley Additive Explanations (SHAP) for a moderately, lightly, and significantly affected test patient, respectively. The features in red contribute to positively pushing the model's prediction from the base value to its actual value, whereas those in blue contribute negatively. The base value is the average subscore computed from the samples of a representative subset of the training dataset. While the SMS subscores only range from 0 to 3, the MLP model's prediction output might exceed this range since it is a regression model with the ability to extrapolate.

Table AI. Top key features used by the MLP and DT regression models, sorted from most to least important. The features used by the MLP models were ranked according to permutation importance with 500 repetitions of random shuffling. The features used by the DT models were sorted from most to least important in terms of their total contribution in reducing the squared error over all tree splits

SMS subscore	*Top 20 features used by the MLP model*	*All features used by the DT model (MLP rank in parenthesis)*
Trunk posture	1. Knee Flex./Ex. NAV ipsi. (Swing max.)	1. (193) Single Support ipsi.
	2. Elbow Flex./Ex. NAV contra. (Stride max.)	2. (205) Pelvis Rotation Angle contra. (Stride max.)
	3. Knee Flex./Ex. NAV ipsi. (Stance max.)	3. (80) Elbow Flex./Ex. Angle contra. (Stance max.)
	4. Knee Flex./Ex. NAV contra. (Stance max.)	4. (8) Ankle Dorsiflexion NAV ipsi. (Swing min.)
	5. Knee Flex./Ex. NAV ipsi. (Swing min.)	5. (179) Step Length (norm.) ipsi.
	6. Ankle Dorsiflexion NAV ipsi. (Stride min.)	6. (200) Stance Duration contra.
	7. Ankle Dorsiflexion NAV ipsi. (Swing max.)	7. (235) Hip Flex./Ex. Angle contra. (Stance max.)
	8. Ankle Dorsiflexion NAV ipsi. (Swing min.)	8. (224) Knee Flex./Ex. Angle contra. (Swing min.)
	9. Knee Flex./Ex. NAV contra. (Stride max.)	9. (38) Stride Time contra.
	10. Ankle Dorsiflexion NAV ipsi. (Stance min.)	10. (161) Ankle Dorsiflexion Angle contra. (Stride min.)
	11. Knee Flex./Ex. NAV contra. (Swing median)	11. (218) Step Width (norm.) ipsi.
	12. Hip Flex./Ex. NAV ipsi. (Stride max.)	12. (183) Gait Speed contra.
	13. Hip Flex./Ex. NAV ipsi. (Stance max.)	13. (130) Ankle Inversion/Eversion Angle ipsi. (Stride max.)
	14. Knee Flex./Ex. NAV ipsi. (Stride min.)	14. (227) Thorax Side Tilt NAV contra. (Swing max.)
	15. Hip Flex./Ex. NAV ipsi. (Swing min.)	15. (182) Pelvis Tilt NAV contra. (Stride min.)
	16. Elbow Flex./Ex. NAV contra. (Stance max.)	16. (204) Thorax Rotation Angle contra. (Stride median)
	17. Knee Flex./Ex. NAV ipsi. (Stride max.)	-
	18. Elbow Flex./Ex. NAV contra. (Stance min.)	-
	19. Pelvis Rotation NAV contra. (Stride max.)	-
	20. Thorax Rotation NAV ipsi. (Stride min.)	-

Table AI (cont.). Top key features used by the MLP and DT regression models, sorted from most to least important. The features used by the MLP models were ranked according to permutation importance with 500 repetitions of random shuffling. The features used by the DT models were sorted from most to least important in terms of their total contribution in reducing the squared error over all tree splits

SMS subscore	*Top 20 features used by the MLP model*	*All features used by the DT model (MLP rank in parenthesis)*
Leg movement	1. Knee Flex./Ex. NAV ipsi. (Stride max.)	1. (17) Gait Speed ipsi.
	2. Knee Flex./Ex. NAV ipsi. (Swing min.)	2. (88) Stride Time contra.
	3. Hip Flex./Ex. NAV contra. (Stance max.)	3. (77) Ankle Dorsiflexion Angle contra. (Swing max.)
	4. Ankle Dorsiflexion NAV contra. (Stride max.)	4. (46) Pelvis Tilt NAV ipsi. (Swing median)
	5. Ankle Dorsiflexion NAV ipsi. (Stance min.)	5. (9) Knee Flex./Ex. NAV contra. (Stride max.)
	6. Knee Flex./Ex. NAV ipsi. (Stance max.)	6. (41) Knee Flex./Ex. NAV ipsi. (Stride min.)
	7. Knee Flex./Ex. NAV contra. (Stance max.)	7. (24) Knee Flex./Ex. Angle contra. (Swing min.)
	8. Knee Flex./Ex. NAV ipsi. (Swing max.)	8. (18) Knee Flex./Ex. NAV contra. (Swing median)
	9. Knee Flex./Ex. NAV contra. (Stride max.)	9. (57) Knee Flex./Ex. Angle ipsi. (Stance min.)
	10. Hip Flex./Ex. NAV ipsi. (Swing min.)	10. (136) Ankle Dorsiflexion Angle contra. (Stride median)
	11. Ankle Dorsiflexion NAV ipsi. (Swing min.)	11. (126) Pelvis Rotation Angle contra. (Stride max.)
	12. Ankle Dorsiflexion NAV contra. (Swing max.)	12. (144) Single Support ipsi.
	13. Pelvis Rotation NAV contra. (Stance max.)	13. (117) Pelvis Obliquity Angle ipsi. (Swing median)
	14. Foot Progression NAV contra. (Swing min.)	14. (105) Ankle Inversion/Eversion Angle contra. (Swing max.)
	15. Hip Flex./Ex. NAV ipsi. (Stride max.)	15. (93) Ankle Dorsiflexion Angle contra. (Stance median)
	16. Knee Flex./Ex. NAV contra. (Swing max.)	16. (83) Step Time ipsi.
	17. Gait Speed ipsi.	17. (80) Hip Flex./Ex. Angle ipsi. (Stance max.)
	18. Knee Flex./Ex. NAV contra. (Swing median)	18. (178) Ankle Dorsiflexion Angle contra. (Stride min.)
	19. Knee Flex./Ex. NAV ipsi. (Swing median)	19. (113) Ankle Inversion/Eversion Angle ipsi. (Stride median)
	20. Double Support contra.	-

Table AI (cont.). Top key features used by the MLP and DT regression models, sorted from most to least important. The features used by the MLP models were ranked according to permutation importance with 500 repetitions of random shuffling. The features used by the DT models were sorted from most to least important in terms of their total contribution in reducing the squared error over all tree splits

SMS subscore	*Top 20 features used by the MLP model*	*All features used by the DT model (MLP rank in parenthesis)*
Arm movement	1. Walking Cane?	1. (4) Gait Speed contra.
	2. Gait Speed ipsi.	2. (5) Shoulder Flex./Ex. NAV contra. (Swing median)
	3. Shoulder Abduction NAV contra. (Swing max.)	3. (63) Shoulder Flex./Ex. Angle ipsi. (Swing max.)
	4. Gait Speed contra.	4. (58) Elbow Flex./Ex. Angle ipsi. (Stride median)
	5. Shoulder Flex./Ex. NAV contra. (Swing median)	5. (29) Shoulder Flex./Ex. Angle ipsi. (Stride min.)
	6. Thorax Rotation NAV ipsi. (Swing max.)	6. (99) Thorax Rotation Angle ipsi. (Stride min.)
	7. Shoulder Abduction Angle contra. (Swing min.)	7. (2) Gait Speed ipsi.
	8. Elbow Flex./Ex. NAV ipsi. (Swing min.)	8. (17) Shoulder Flex./Ex. Angle ipsi. (Stance median)
	9. Thorax Rotation NAV ipsi. (Stance min.)	9. (39) Thorax Tilt NAV contra. (Stride min.)
	10. Spine Tilt NAV contra. (Swing median)	10. (53) Thorax Tilt NAV contra. (Swing median)
	11. Spine Rotation NAV ipsi. (Swing min.)	11. (78) Thorax Rotation Angle contra. (Stance max.)
	12. Shoulder Abduction NAV contra. (Swing median)	12. (37) Cadence ipsi.
	13. Shoulder Flex./Ex. NAV ipsi. (Swing max.)	13. (85) Thorax Tilt Angle ipsi. (Stance max.)
	14. Shoulder Flex./Ex. NAV contra. (Stance median)	14. (18) Thorax Rotation NAV contra. (Stride min.)
	15. Spine Side Tilt NAV ipsi. (Stance min.)	15. (20) Elbow Flex./Ex. NAV contra. (Stance median)
	16. Thorax Rotation NAV contra. (Stance min.)	16. (22) Thorax Tilt NAV ipsi. (Swing median)
	17. Shoulder Flex./Ex. Angle ipsi. (Stance median)	17. (50) Thorax Rotation Angle ipsi. (Swing max.)
	18. Thorax Rotation NAV contra. (Stride min.)	-
	19. No Ankle-Foot Orthosis?	-
	20. Elbow Flex./Ex. NAV contra. (Stance median)	-

Table AI (cont.). Top key features used by the MLP and DT regression models, sorted from most to least important. The features used by the MLP models were ranked according to permutation importance with 500 repetitions of random shuffling. The features used by the DT models were sorted from most to least important in terms of their total contribution in reducing the squared error over all tree splits

SMS subscore	*Top 20 features used by the MLP model*	*All features used by the DT model (MLP rank in parenthesis)*
Gait speed	1. Walking Cane?	1. (2) Stride Length (norm.) contra.
	2. Stride Length (norm.) contra.	2. (9) Gait Speed contra.
	3. Step Time ipsi.	3. (3) Step Time ipsi.
	4. Double Support ipsi.	4. (23) Step Length (norm.) contra.
	5. Stride Time ipsi.	5. (15) Double Support contra.
	6. Cadence contra.	6. (4) Double Support ipsi.
	7. Stride Time contra.	7. (5) Stride Time ipsi.
	8. Cadence ipsi.	8. (16) Limp Index ipsi.
	9. Gait Speed contra.	9. (24) Single Support contra.
	10. Stride Length (norm.) ipsi.	10. (18) Step Width (norm.) ipsi.
	11. Double Support contra.	11. (1) Walking Cane?
	12. Swing Duration ipsi.	12. (6) Cadence contra.
	13. No Ankle-Foot Orthosis?	13. (26) Swing Start contra.
	14. Step Length (norm.) ipsi.	14. (10) Stride Length (norm.) ipsi.
	15. Double Support contra.	-
	16. Limp Index ipsi.	-
	17. Step Width (norm.) contra.	-
	18. Step Width (norm.) ipsi.	-
	19. Single Support ipsi.	-
	20. Limp Index contra.	-

Table AI (cont.). Top key features used by the MLP and DT regression models, sorted from most to least important. The features used by the MLP models were ranked according to permutation importance with 500 repetitions of random shuffling. The features used by the DT models were sorted from most to least important in terms of their total contribution in reducing the squared error over all tree splits

SMS subscore	*Top 20 features used by the MLP model*	*All features used by the DT model (MLP rank in parenthesis)*
Gait fluency	1. Walking Cane?	1. (51) Double Support contra.
	2. Knee Flex./Ex. NAV contra. (Stride max.)	2. (185) Swing Duration contra.
	3. Knee Flex./Ex. NAV ipsi. (Swing max.)	3. (110) Hip Adduction Angle contra. (Stance median)
	4. Knee Flex./Ex. NAV contra. (Swing median)	4. (187) Pelvis Rotation Angle ipsi. (Stance min.)
	5. Knee Flex./Ex. NAV ipsi. (Stride min.)	5. (249) Stance Duration contra.
	6. Elbow Flex./Ex. NAV contra. (Stance max.)	6. (135) Thorax Rotation Angle ipsi. (Swing min.)
	7. Elbow Flex./Ex. NAV contra. (Stride max.)	7. (129) Shoulder Abduction Angle ipsi. (Stride max.)
	8. Ankle Dorsiflexion NAV ipsi. (Stance min.)	8. (18) Double Support ipsi.
	9. Knee Flex./Ex. NAV ipsi. (Stance max.)	9. (230) Elbow Flex./Ex. Angle ipsi. (Stance min.)
	10. Knee Flex./Ex. NAV ipsi. (Swing min.)	10. (256) Cadence contra.
	11. Foot Progression NAV contra. (Stride min.)	11. (165) Cadence ipsi.
	12. Knee Flex./Ex. NAV contra. (Stance max.)	12. (236) Shoulder Flex./Ex. Angle ipsi. (Stance min.)
	13. Hip Flex./Ex. NAV ipsi. (Stance max.)	13. (203) Thorax Tilt Angle contra. (Swing min.)
	14. Thorax Rotation NAV contra. (Stride max.)	14. (140) Elbow Flex./Ex. Angle contra. (Stride min.)
	15. Knee Flex./Ex. NAV ipsi. (Stride max.)	15. (233) Stride Length (norm.) contra.
	16. Stride Time ipsi.	16. (20) Hip Flex./Ex. NAV contra. (Swing max.)
	17. Hip Flex./Ex. NAV contra. (Stance max.)	17. (200) Ankle Dorsiflexion Angle contra. (Stride max.)
	18. Double Support ipsi.	18. (17) Hip Flex./Ex. NAV contra. (Stance max.)
	19. Hip Adduction NAV contra. (Swing min.)	19. (142) Elbow Flex./Ex. Angle ipsi. (Swing median)
	20. Hip Flex./Ex. NAV contra. (Swing max.)	20. (176) Pelvis Rotation Angle contra. (Swing max.)

Table AI (cont.). Top key features used by the MLP and DT regression models, sorted from most to least important. The features used by the MLP models were ranked according to permutation importance with 500 repetitions of random shuffling. The features used by the DT models were sorted from most to least important in terms of their total contribution in reducing the squared error over all tree splits

SMS subscore	*Top 20 features used by the MLP model*	*All features used by the DT model (MLP rank in parenthesis)*
Stability of walking on flat ground/risk of falling	1. Walking Cane?	1. (1) Walking Cane?
	2. Knee Flex./Ex. NAV ipsi. (Stance max.)	2. (221) Stance Duration contra.
	3. Hip Flex./Ex. NAV contra. (Stance max.)	3. (91) Step Time ipsi.
	4. Knee Flex./Ex. NAV contra. (Swing median)	4. (201) Spine Rotation Angle ipsi. (Swing max.)
	5. Ankle Dorsiflexion NAV ipsi. (Stance min.)	5. (125) Stride Length (norm.) ipsi.
	6. Ankle Dorsiflexion NAV ipsi. (Stride min.)	6. (79) Spine Side Tilt Angle ipsi. (Swing max.)
	7. Elbow Flex./Ex. NAV contra. (Swing median)	7. (121) Thorax Tilt NAV contra. (Stance max.)
	8. Knee Flex./Ex. NAV ipsi. (Stride max.)	8. (26) Foot Progression Angle contra. (Swing median)
	9. Elbow Flex./Ex. NAV contra. (Swing min.)	9. (228) Elbow Flex./Ex. Angle contra. (Stance median)
	10. Knee Flex./Ex. NAV ipsi. (Swing max.)	10. (136) Thorax Rotation Angle contra. (Swing median)
	11. Hip Flex./Ex. NAV contra. (Stride max.)	11. (5) Ankle Dorsiflexion NAV ipsi. (Stance min.)
	12. Shoulder Flex./Ex. NAV ipsi. (Swing max.)	12. (58) Hip Flex./Ex. Angle ipsi. (Stride min.)
	13. Hip Flex./Ex. NAV contra. (Swing max.)	-
	14. Foot Progression NAV ipsi. (Swing median)	-
	15. Hip Flex./Ex. NAV ipsi. (Swing max.)	-
	16. Knee Flex./Ex. NAV ipsi. (Stride min.)	-
	17. Shoulder Flex./Ex. NAV contra. (Stance median)	-
	18. Knee Flex./Ex. NAV ipsi. (Stride median)	-
	19. Elbow Flex./Ex. NAV contra. (Stride max.)	-
	20. Pelvis Rotation NAV contra. (Stance median)	-

SMS: Stroke Mobility Score; DT: Decision tree; MLP: Multilayer perceptron artificial neural network; NAV: Normalized angular velocity.

Table BI. Breakdown of the SMS predictions of the two outliers in terms of the SMS subscores

Score	*Patient I – ID: 077*			*Patient II – ID: 109*		
	Board	*DT*	*MLP*	*Board*	*DT*	*MLP*
SMS	9	2.28	4.63	9	4.37	4.24
Trunk-SMS	1	0.13	0.34	1	0.62	0.38
Leg-SMS	2	0.02	0.88	3	1.16	1.05
Arm-SMS	3	1.23	1.62	1	0.33	1.00
Speed-SMS	1	0.37	0.21	1	0.95	0.52
Fluency-SMS	1	0.17	1.21	2	0.60	1.08
Stability-SMS	1	0.37	0.38	1	0.70	0.21

SMS: Stroke Mobility Score; DT: Decision tree regression model; MLP: Multilayer perceptron artificial neural network regression model.

Fig. A1. The decision tree model predicting for the Trunk-SMS.

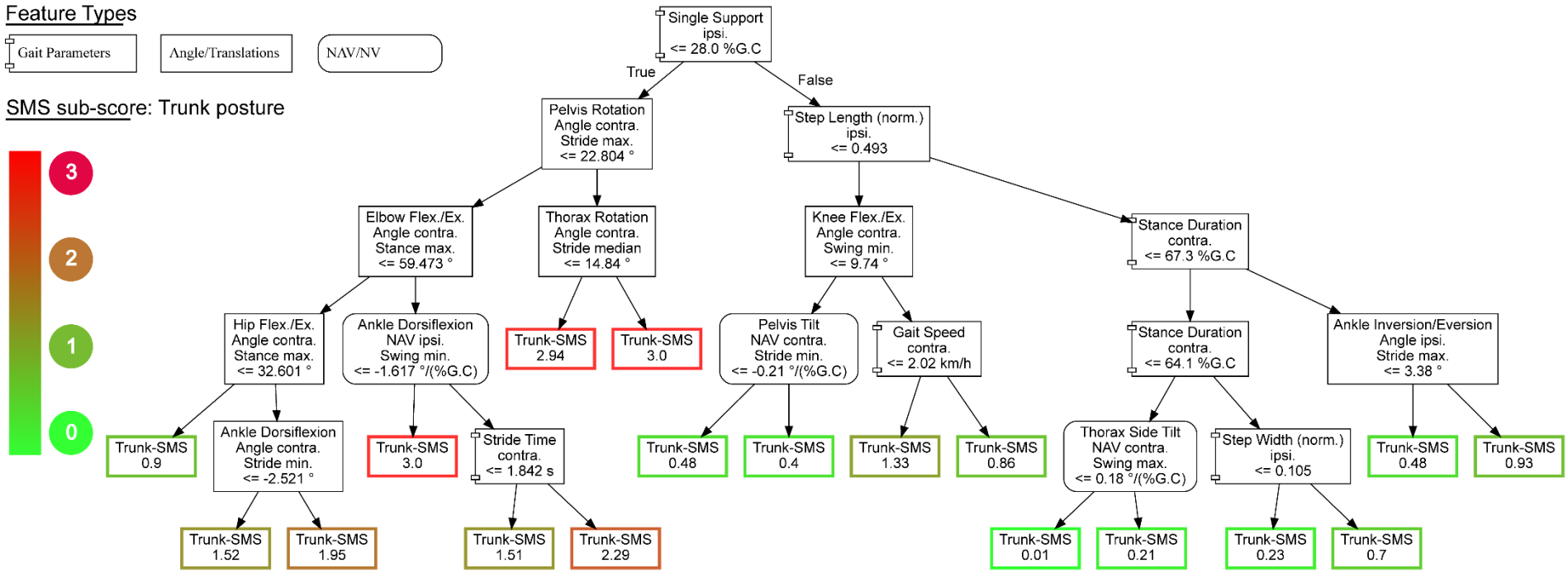


Fig. A2. The decision tree model predicting for the Leg-SMS.

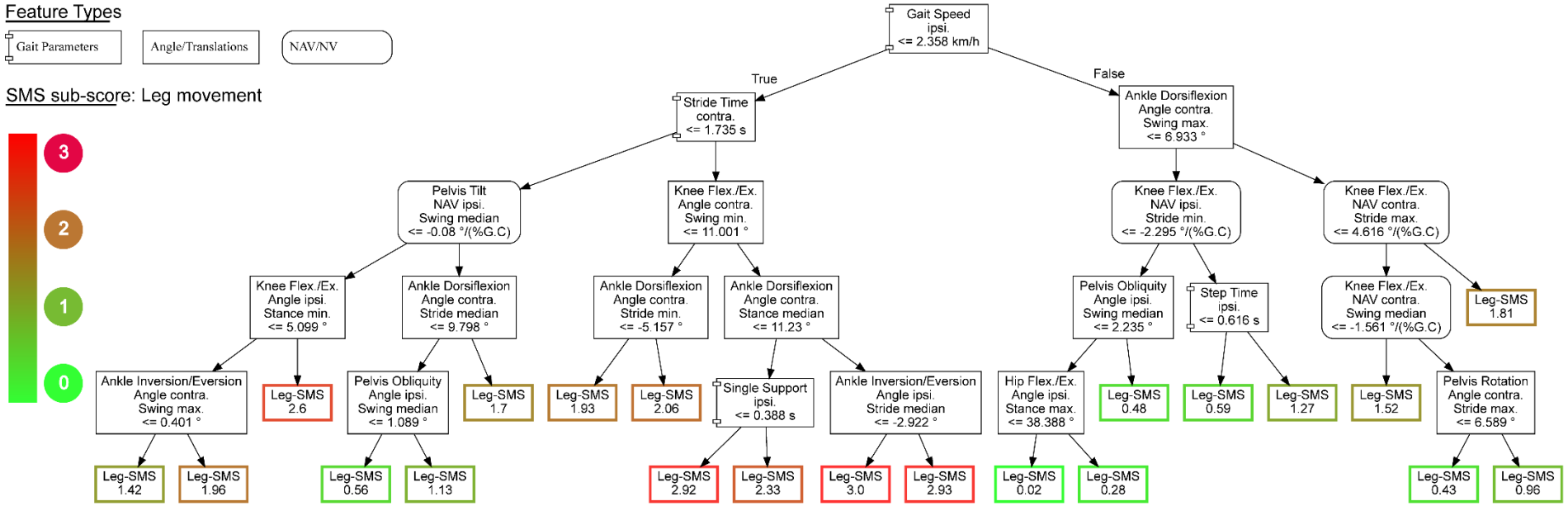


Fig. A3. The decision tree model predicting for the Arm-SMS.

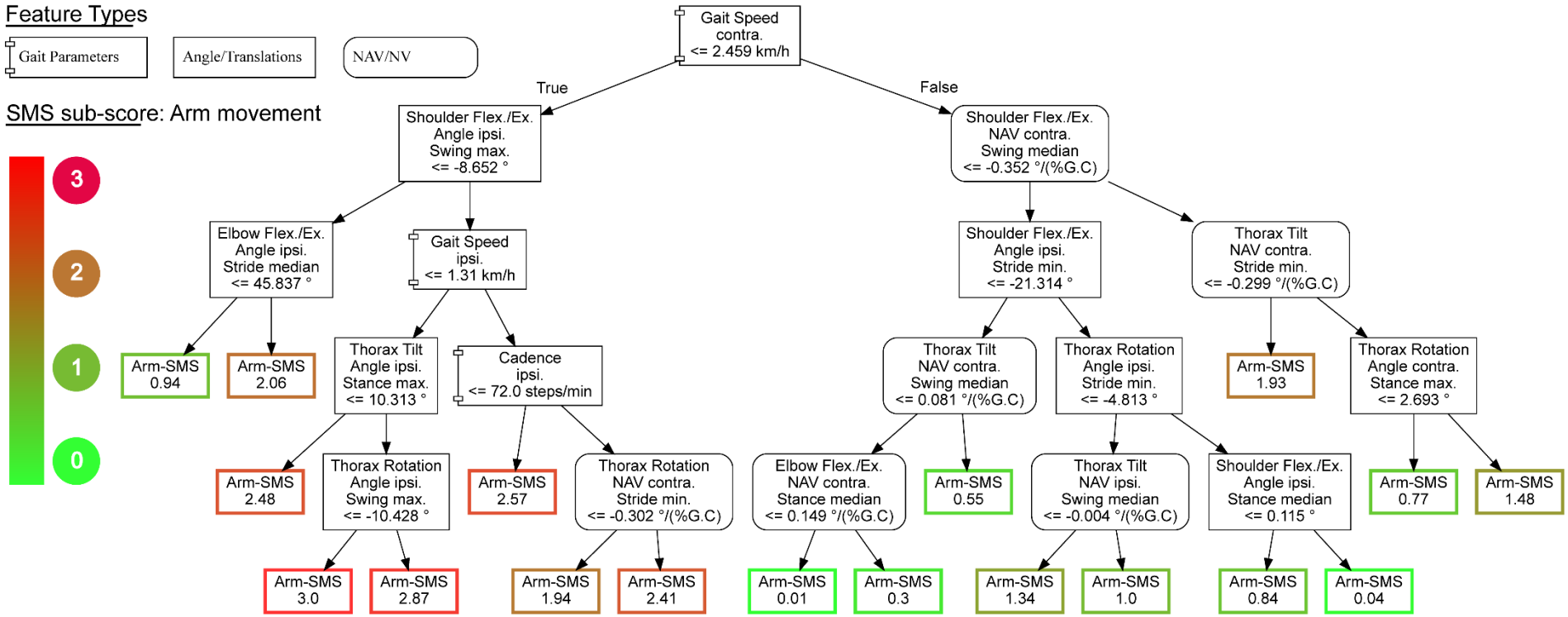


Fig. A4. The decision tree model predicting for the Speed-SMS.

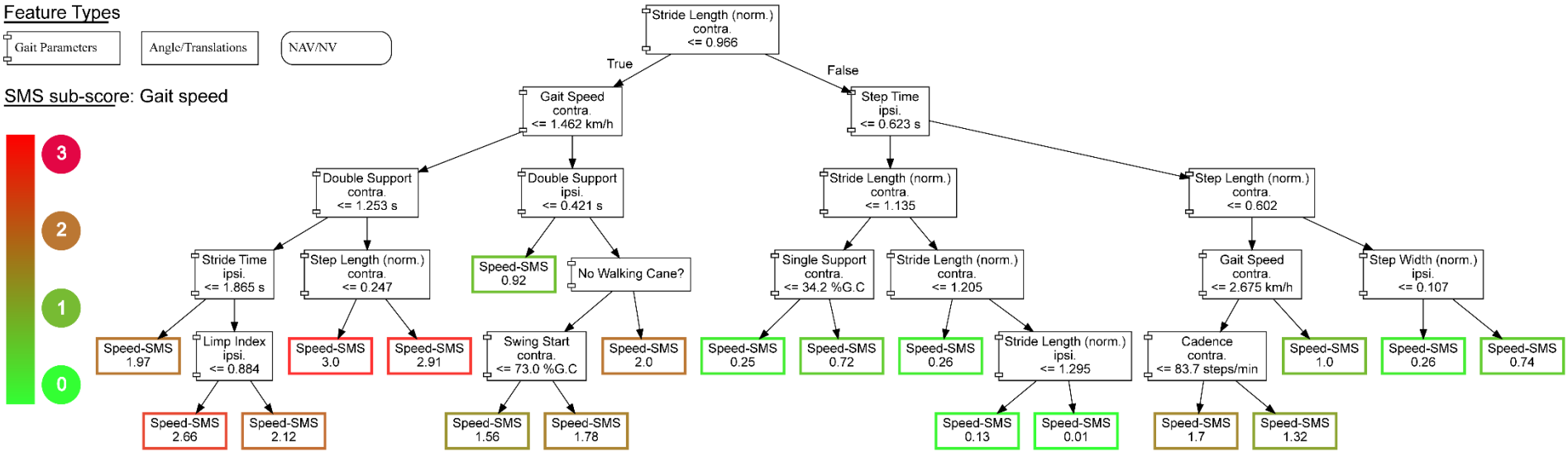


Fig. A5. The decision tree model predicting for the Fluency-SMS.

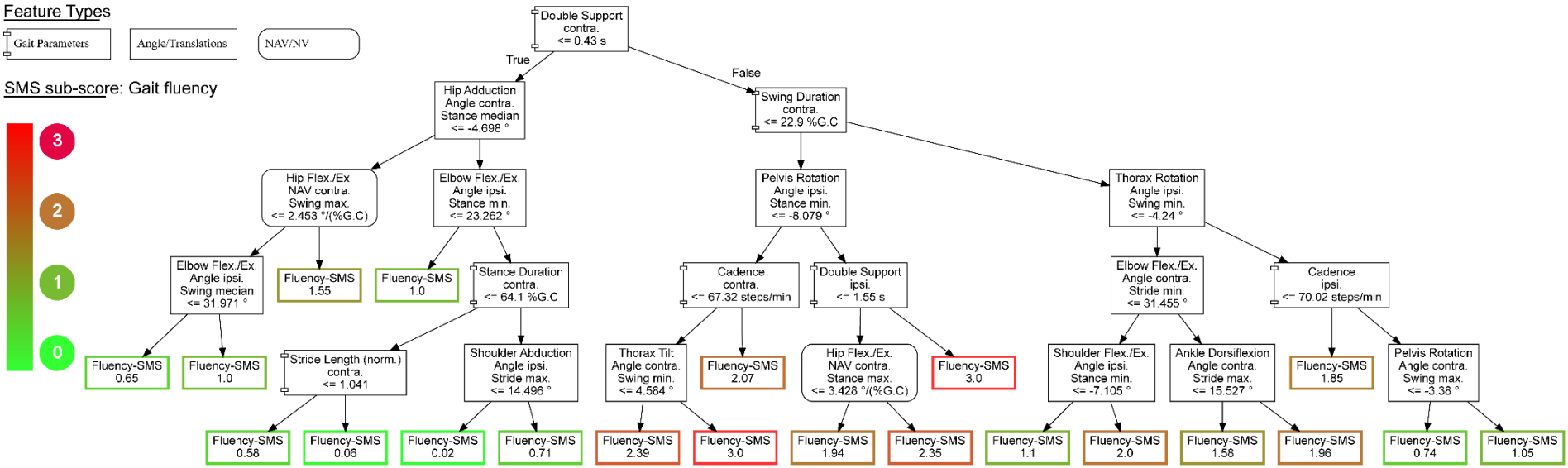


Fig. A6. The decision tree model predicting for the Stability-SMS.

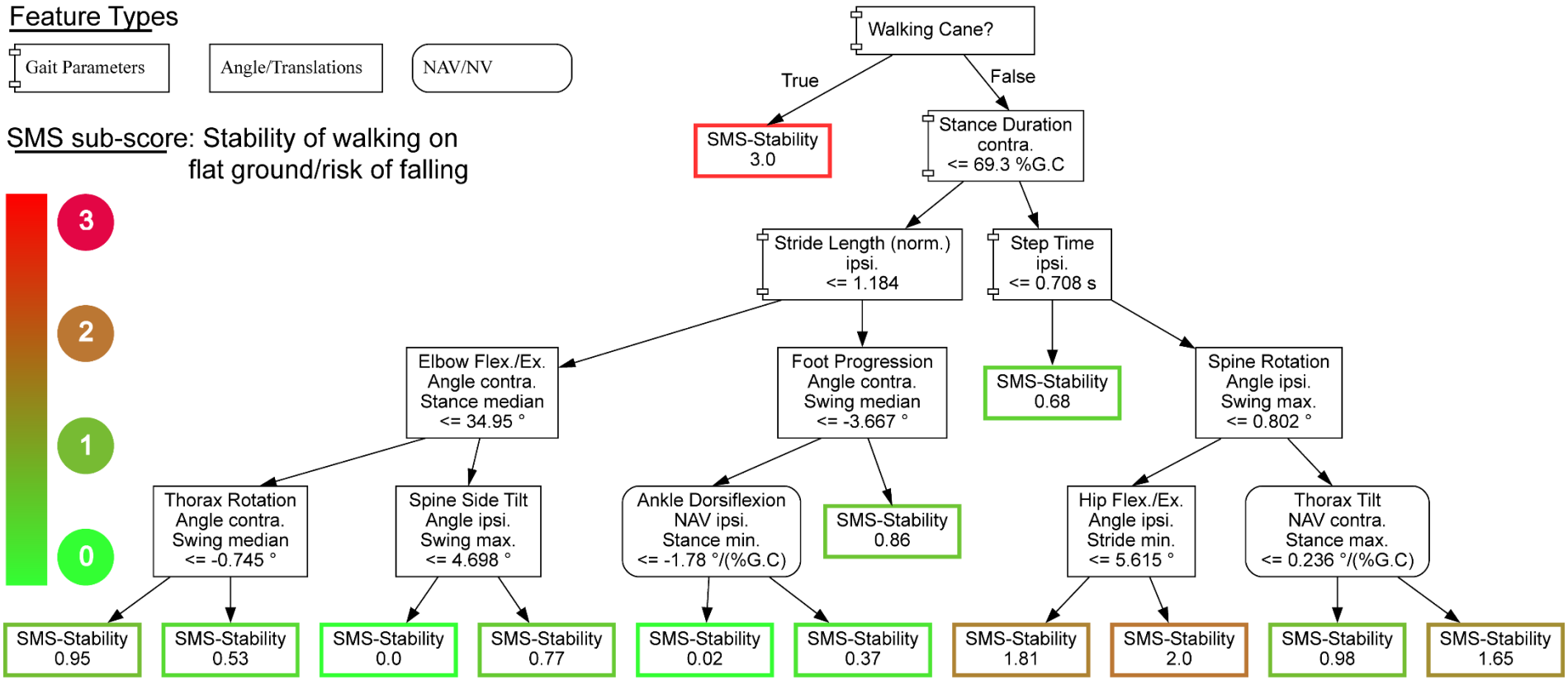


Fig. B1. Boxplots of the feature gait speed (ipsi.) on the left, and gait speed (contra.) on the right, that were used to split the root nodes of the Leg- and Arm-SMS decision tree models, respectively. The whiskers on the upper and lower end correspond to 1.5 times the interquartile range above the third quartile (Q3) and below the first quartile (Q1), respectively.

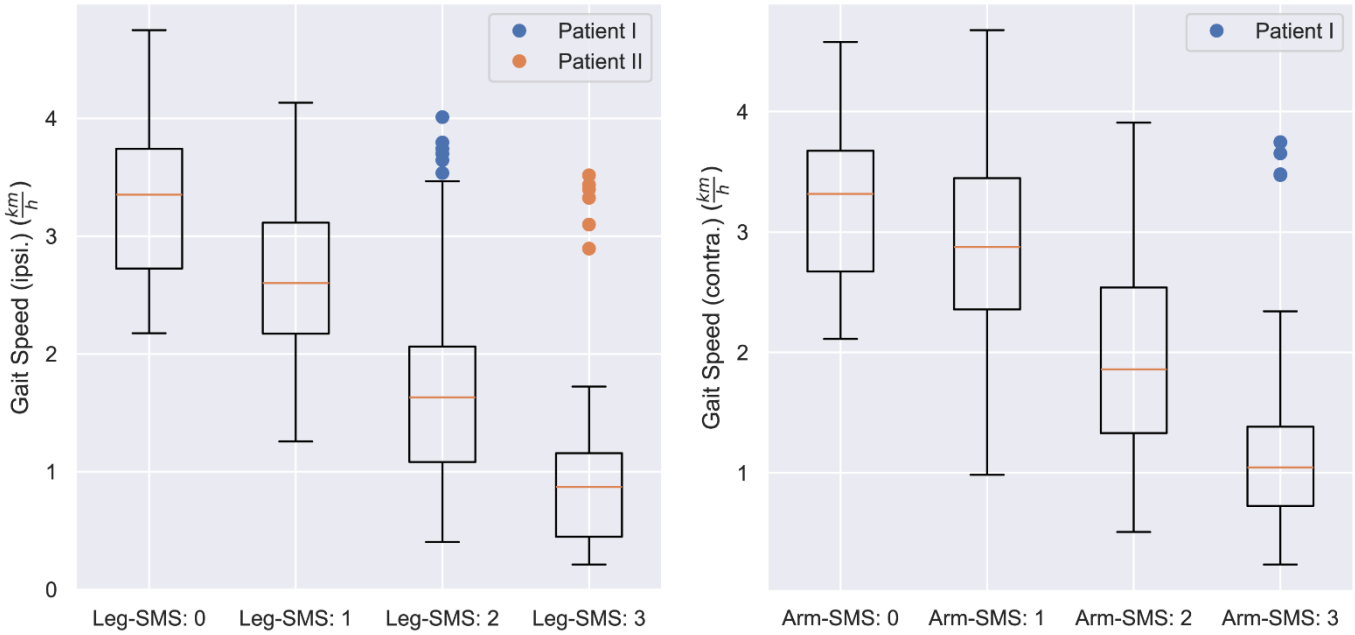
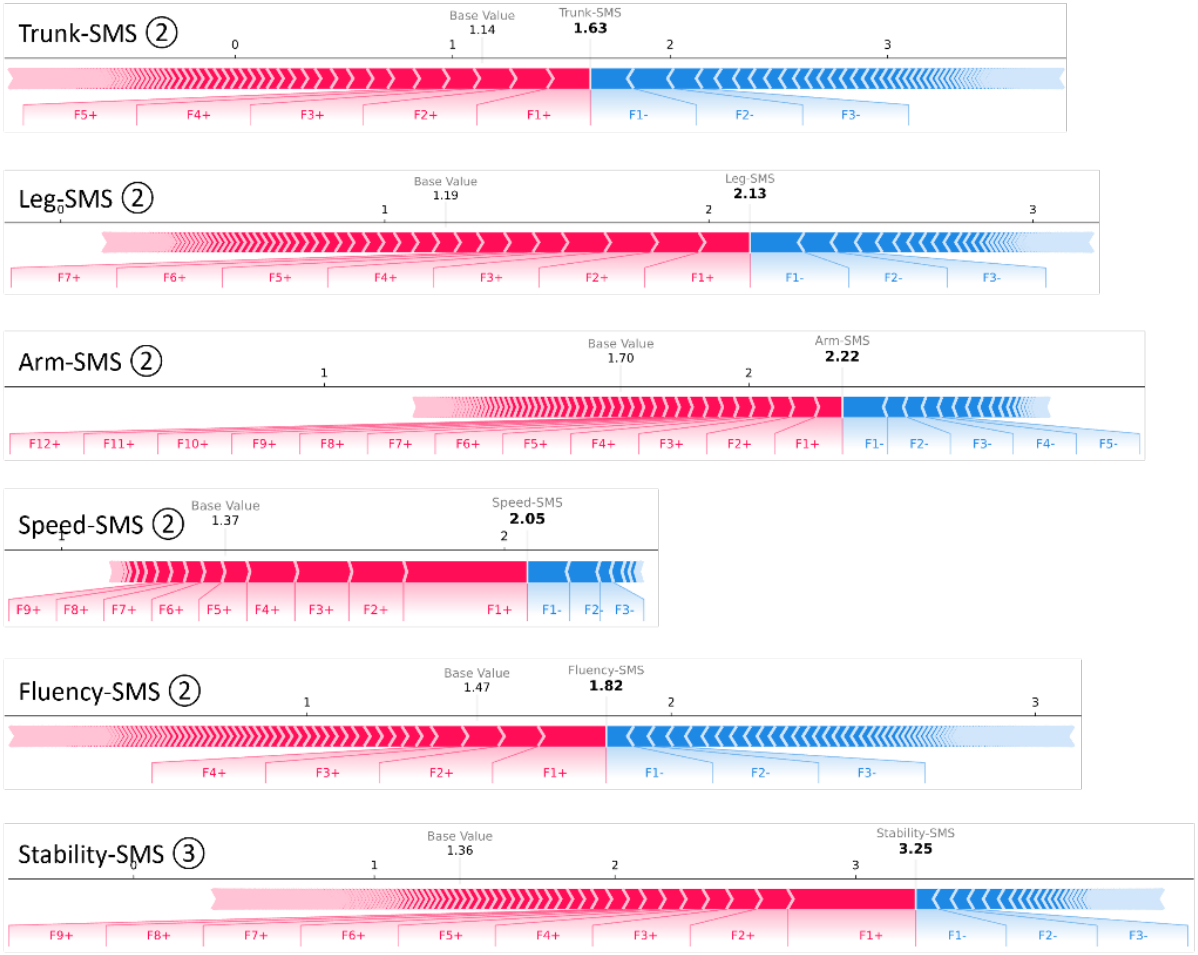


Fig. C1. Example of using SHAP to explain the MLP model's prediction for a moderately affected patient.

Patient ID: 180
Stroke Mobility Score: 13



	Key Features	Effect
Trunk-SMS	F1+ Pelvis Tilt NAV ipsi. (Stride max.): 0.82 °/(%G.C)	0.2
	F2+ Hip Flex./Ex. NAV ipsi. (Stance max.): 2.446 °/(%G.C)	0.17
	F3+ Thorax Tilt NAV contra. (Stride max.): 0.967 °/(%G.C)	0.17
	F1- Hip Flex./Ex. NAV ipsi. (Swing max.): 2.553 °/(%G.C)	-0.2
	F2- Spine Tilt NAV contra. (Swing min.): -0.688 °/(%G.C)	-0.18
	F3- Knee Flex./Ex. NAV ipsi. (Swing max.): 3.217 °/(%G.C)	-0.13
Leg-SMS	F1+ Pelvis Tilt NAV contra. (Stance min.): -0.896 °/(%G.C)	0.16
	F2+ Pelvis Rotation NAV contra. (Stance max.): 0.895 °/(%G.C)	0.15
	F3+ Pelvis Tilt NAV ipsi. (Stride min.): -0.849 °/(%G.C)	0.14
	F1- Knee Flex./Ex. NAV ipsi. (Stride max.): 3.34 °/(%G.C)	-0.17
	F2- Hip Flex./Ex. NAV contra. (Stance max.): 1.2 °/(%G.C)	-0.1
	F3- Hip Flex./Ex. NAV ipsi. (Stride max.): 2.553 °/(%G.C)	-0.07
Arm-SMS	F1+ Thorax Tilt NAV contra. (Stance max.): 0.967 °/(%G.C)	0.06
	F2+ Thorax Tilt NAV ipsi. (Swing median): -0.19 °/(%G.C)	0.06
	F3+ Thorax Tilt NAV contra. (Stride max.): 0.967 °/(%G.C)	0.05
	F1- Spine Tilt NAV contra. (Swing median): -0.199 °/(%G.C)	-0.11
	F2- Shoulder Abduction NAV contra. (Stance median): 0.146 °/(%G.	-0.05
	F3- Shoulder Flex./Ex. NAV ipsi. (Swing max.): 1.43 °/(%G.C)	-0.04
Speed-SMS	F1+ Walking Cane?: Yes	0.28
	F2+ Stride Time ipsi.: 1.88 s	0.12
	F3+ Stride Time contra.: 1.97 s	0.12
	F1- Stride Length (norm.) contra.: 1.05	-0.1
	F2- Cadence contra.: 60.914 steps/min	-0.07
	F3- Step Length (norm.) contra.: 0.5	-0.03
Fluency-SMS	F1+ Walking Cane?: Yes	0.19
	F2+ Hip Flex./Ex. NAV ipsi. (Stance max.): 2.446 °/(%G.C)	0.11
	F3+ Thorax Tilt NAV contra. (Stride max.): 0.967 °/(%G.C)	0.1
	F1- Knee Flex./Ex. NAV ipsi. (Stance max.): 3.34 °/(%G.C)	-0.08
	F2- Shoulder Flex./Ex. NAV contra. (Stance median): 0.489 °/(%G.C)	-0.06
	F3- Pelvis Tilt NAV ipsi. (Stride min.): -0.849 °/(%G.C)	-0.05
Stability-SMS	F1+ Walking Cane?: Yes	0.53
	F2+ Pelvis Tilt NAV contra. (Stride min.): -0.896 °/(%G.C)	0.13
	F3+ Thorax Tilt NAV contra. (Stance max.): 0.967 °/(%G.C)	0.12
	F1- Knee Flex./Ex. NAV ipsi. (Stance max.): 3.34 °/(%G.C)	-0.1
	F2- Elbow Flex./Ex. NAV contra. (Swing min.): -0.633 °/(%G.C)	-0.07
	F3- Shoulder Flex./Ex. NAV contra. (Stance median): 0.489 °/(%G.C)	-0.07

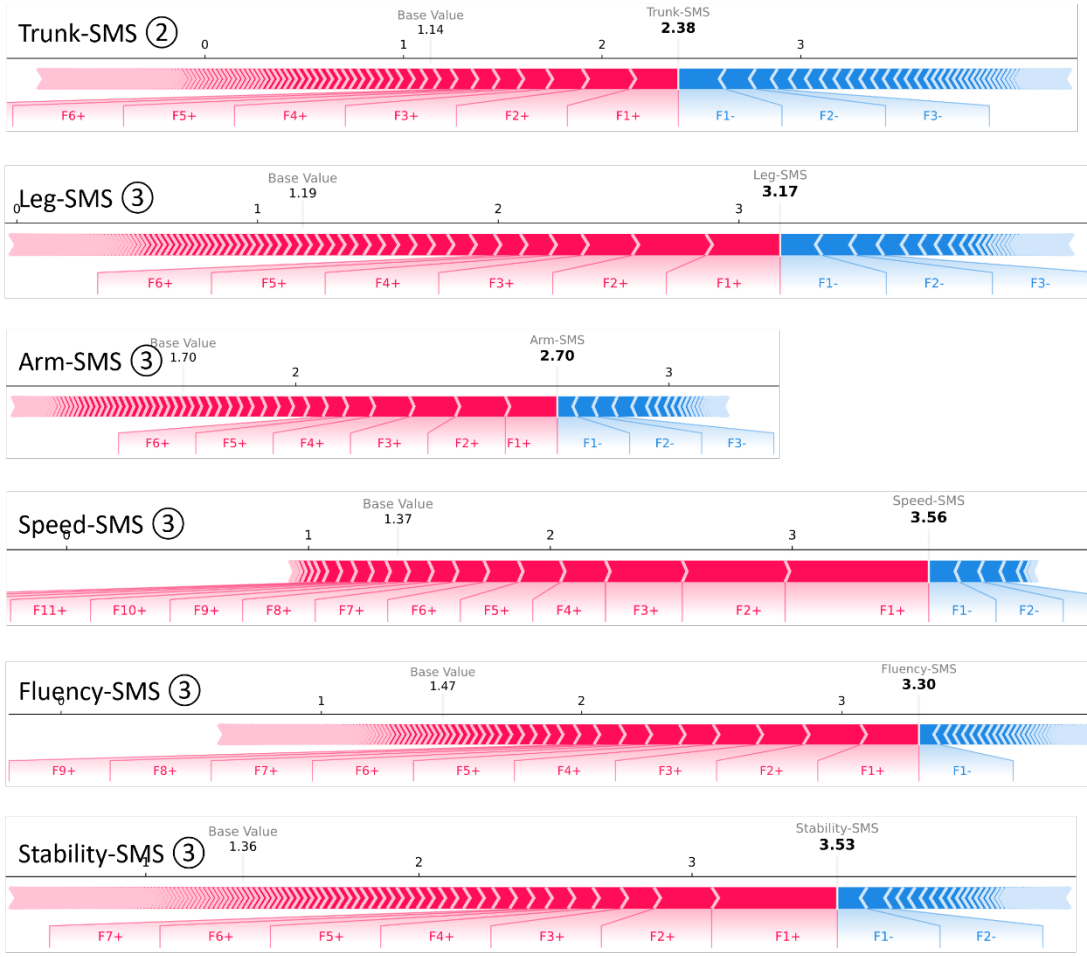
Fig. C2. Example of using SHAP to explain the MLP model's prediction for a lightly affected patient.

Patient ID: 086
Stroke Mobility Score: 3

	Key Features	Effect
Trunk-SMS	F1+ Knee Flex./Ex. NAV ipsi. (Stance max.): 3.389 °/(%G.C)	0.1
	F2+ Hip Flex./Ex. NAV ipsi. (Stride max.): 2.092 °/(%G.C)	0.07
	F3+ Ankle Dorsiflexion NAV ipsi. (Stance min.): -2.969 °/(%G.C)	0.07
	F1- Ankle Dorsiflexion NAV ipsi. (Stride min.): -2.969 °/(%G.C)	-0.12
	F2- Shoulder Flex./Ex. NAV ipsi. (Stance median): 0.44 °/(%G.C)	-0.07
	F3- Stride Length (norm.) contra.: 1.07	-0.07
Leg-SMS	F1+ Knee Flex./Ex. NAV ipsi. (Stance max.): 3.389 °/(%G.C)	0.14
	F2+ Knee Flex./Ex. NAV contra. (Stride max.): 2.125 °/(%G.C)	0.12
	F3+ Ankle Dorsiflexion NAV ipsi. (Stride min.): -2.969 °/(%G.C)	0.08
	F1- Knee Flex./Ex. NAV ipsi. (Swing min.): -3.509 °/(%G.C)	-0.21
	F2- Knee Flex./Ex. NAV ipsi. (Stride max.): 3.389 °/(%G.C)	-0.2
	F3- Ankle Dorsiflexion NAV ipsi. (Stance min.): -2.969 °/(%G.C)	-0.11
Arm-SMS	F1+ Shoulder Flex./Ex. Angle contra. (Swing min.): -29.862 °	0.03
	F2+ Spine Rotation NAV contra. (Stance median): -0.194 °/(%G.C)	0.02
	F3+ Elbow Flex./Ex. Angle ipsi. (Stance max.): 52.779 °	0.01
	F1- Elbow Flex./Ex. NAV ipsi. (Swing min.): -1.056 °/(%G.C)	-0.11
	F2- Gait Speed ipsi.: 3.034 km/h	-0.08
	F3- Gait Speed contra.: 2.949 km/h	-0.07
Speed-SMS	F1+ Cadence contra.: 101.695 steps/min	0.04
	F2+ Swing Start ipsi.: 65.55 %G.C	0.01
	F3+ Double Support (por.) contra.: 29.66 %G.C	0.01
	F1- Stride Length (norm.) contra.: 1.07	-0.13
	F2- Walking Cane?: No	-0.1
	F3- Step Time ipsi.: 0.55 s	-0.09
Fluency-SMS	F1+ Knee Flex./Ex. NAV ipsi. (Stride min.): -3.509 °/(%G.C)	0.16
	F2+ Knee Flex./Ex. NAV contra. (Stance max.): 1.903 °/(%G.C)	0.12
	F3+ Knee Flex./Ex. NAV ipsi. (Stride max.): 3.389 °/(%G.C)	0.05
	F1- Ankle Dorsiflexion NAV ipsi. (Stance min.): -2.969 °/(%G.C)	-0.08
	F2- Knee Flex./Ex. NAV contra. (Stride max.): 2.125 °/(%G.C)	-0.08
	F3- Pelvis Obliquity NAV contra. (Stance median): -0.15 °/(%G.C)	-0.05
Stability-SMS	F1+ Knee Flex./Ex. NAV ipsi. (Swing min.): -3.509 °/(%G.C)	0.05
	F2+ Hip Flex./Ex. NAV ipsi. (Stance max.): 1.665 °/(%G.C)	0.05
	F3+ Ankle Dorsiflexion NAV ipsi. (Swing min.): -2.695 °/(%G.C)	0.04
	F1- Walking Cane?: No	-0.18
	F2- Elbow Flex./Ex. NAV contra. (Swing min.): -0.92 °/(%G.C)	-0.09
	F3- Shoulder Flex./Ex. NAV ipsi. (Swing max.): -0.639 °/(%G.C)	-0.09

Fig. C3. Example of using SHAP to explain the MLP model's prediction for a significantly affected patient.

Patient ID: 100
Stroke Mobility Score: 17



	Key Features	Effect
Trunk-SMS	F1+ Stride Time contra.: 3.97 s	0.25
	F2+ Step Time ipsi.: 2.48 s	0.24
	F3+ Hip Flex./Ex. NAV contra. (Stride max.): 3.547 °/(%G.C)	0.18
	F1- Knee Flex./Ex. NAV contra. (Stance max.): 6.041 °/(%G.C)	-0.24
	F2- Stride Time ipsi.: 4.4 s	-0.15
	F3- Thorax Rotation NAV ipsi. (Stride max.): 1.252 °/(%G.C)	-0.11
Leg-SMS	F1+ Double Support (time) ipsi.: 3.13 s	0.31
	F2+ Hip Flex./Ex. NAV contra. (Stance max.): 3.515 °/(%G.C)	0.31
	F3+ Knee Flex./Ex. NAV ipsi. (Stride max.): 1.091 °/(%G.C)	0.21
	F1- Double Support (time) contra.: 3.07 s	-0.17
	F2- Knee Flex./Ex. NAV contra. (Stride max.): 6.041 °/(%G.C)	-0.14
	F3- Knee Flex./Ex. NAV ipsi. (Stance max.): 1.091 °/(%G.C)	-0.11
Arm-SMS	F1+ Gait Speed ipsi.: 0.294 km/h	0.14
	F2+ Shoulder Abduction Angle contra. (Swing min.): 28.659 °	0.13
	F3+ Gait Speed contra.: 0.3 km/h	0.12
	F1- Thorax Tilt NAV ipsi. (Swing min.): -0.473 °/(%G.C)	-0.05
	F2- Cadence contra.: 30.227 steps/min	-0.05
	F3- Thorax Rotation NAV ipsi. (Stride max.): 1.252 °/(%G.C)	-0.05
Speed-SMS	F1+ Stride Time ipsi.: 4.4 s	0.59
	F2+ Step Time ipsi.: 2.48 s	0.42
	F3+ Stride Time contra.: 3.97 s	0.32
	F1- Cadence contra.: 30.227 steps/min	-0.13
	F2- Double Support (time) ipsi.: 3.13 s	-0.1
	F3- Cadence ipsi.: 27.273 steps/min	-0.09
Fluency-SMS	F1+ Stride Time ipsi.: 4.4 s	0.22
	F2+ Double Support (time) ipsi.: 3.13 s	0.22
	F3+ Walking Cane?: Yes	0.18
	F1- Hip Adduction NAV contra. (Swing min.): -1.094 °/(%G.C)	-0.08
	F2- Knee Flex./Ex. NAV contra. (Stance max.): 6.041 °/(%G.C)	-0.04
	F3- Thorax Rotation NAV contra. (Stride min.): -0.882 °/(%G.C)	-0.03
Stability-SMS	F1+ Walking Cane?: Yes	0.46
	F2+ Stride Time ipsi.: 4.4 s	0.21
	F3+ Double Support (time) contra.: 3.07 s	0.12
	F1- Hip Flex./Ex. NAV contra. (Stance max.): 3.515 °/(%G.C)	-0.11
	F2- Elbow Flex./Ex. NAV ipsi. (Swing min.): -1.094 °/(%G.C)	-0.09
	F3- Cadence ipsi.: 27.273 steps/min	-0.04