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Curriculum Vitae

SWENNE, CORNELIS ADRIANUS (1947)



Cees A. Swenne, PhD

**Associate Professor
Cardiology Department
Leiden University Medical Center
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EDUCATION

Technical University, Eindhoven, the Netherlands (Faculty of Physics)
Degree: MSc (March 26, 1971)

University of Utrecht, the Netherlands (Faculty of Medicine)
Degree: PhD (November 20, 1984)

POSITIONS

1971-1983: Biomedical Engineer, Department of Physiological Signal Processing (head: prof. Jan H. van Bommel, PhD), Institute of Medical Physics TNO, Utrecht, NL

1984-1985: Biomedical Engineer, Biomedical Instrumentation Unit TNO (head: prof. Karel H. Wesseling), Amsterdam Medical Center, Amsterdam, NL

1986-present: Senior Researcher / Associate Professor, Cardiology Department (head: prof. Martin J. Schalij; head till 2010: prof. Ernst E. van der Wall, MD; head till 2000: prof. Albert V.G. Brusckhe, MD), Leiden University Medical Center, Leiden, NL

2017-present: Course Director, Biomedical Engineering Master's Degree Course "Physiological Signal Processing and Modelling in Cardiology", Faculty of Engineering, Università Politecnica delle Marche, Ancona, IT

AREAS OF EXPERTISE and PRIMARY INTERESTS

Teaching and Research Interests

- Electrocardiography/Vectorcardiography: Arrhythmia Prediction, Ischemia
- Neurocardiology: Syncope, Exercise Training & Rehabilitation, Music
- Cardiovascular Physiology, especially Electrocardiology, Electrophysiology and Arrhythmias, Syncope, Baroreflex and Blood Pressure Control, Physical Exercise, Training and Rehabilitation, Neurocardiology
- Computerized physiological signal processing and modelling of physiological processes related to the cardiovascular system
- Psychometrics

MAJOR ACTIVITIES

Teaching

- Course Director, "Physiological Signal Processing and Modelling in Cardiology" (Biomedical Engineering Master's Degree Course, Faculty of Engineering, Università Politecnica delle Marche, Ancona, IT)
- Course director "Heart and Circulation" (Medicine, 1st year)
- Course director "Physiology Basic Concepts" (Biomedical Sciences, 2nd year)
- Course director "Transient Loss of Consciousness" (Electives, Medicine, 2nd and 3rd year)
- Course director "Medicine for High School Students" (Tele-education)
- Lectures in various courses in Medicine, Biomedical Sciences and Biopharmacy
- Secretary of the "Student Education Committee" (Cardiology)
- Coordinator of the weekly scientific meetings (Cardiology)
- Member of the "Scientific Traineeship Committee" (Medicine)
- Chairman of the "Exam Quality Control Committee" (Medicine)
- Member of the "Exam Quality Control Committee" (Biomedical Sciences)

Patient care

- Evaluation of orthostasis (head-up tilt tests) in patients with syncope of unknown origin

Research

- Assessment of ventricular electrical heterogeneity (depolarisation heterogeneity, repolarisation heterogeneity, action potential duration heterogeneity) in the electrocardiogram
- Deep learning in serial ECG analysis
- Electrocardiography and vectorcardiography, various subjects, including modelling and development of research oriented signal processing software
- Measurement and interpretation of baroreflex sensitivity and heart rate variability
- Mechanism of action of biventricular pacing in heart failure
- Mechanism of autonomic improvement by rehabilitation of heart failure patients
- Neurocardiological consequences of active music making
- T-wave alternans and other electrocardiographic predictors of lethal cardiac arrhythmias

Software development

- A system for interactive real-time coronary care unit ECG monitoring (Fortran)
- CENSOR: a system for long-term off-line ECG analysis (Holter monitoring) (Fortran)
- LEADS: a system for vectorcardiography based analysis of standard 12-lead ECGs (Matlab)
- BEATS: a system for vectorcardiography based dynamic analysis (Matlab)
- TABULA: a set of C++ routines for general & statistical spreadsheet manipulation
- SIGNUM: a set of C++ routines for manipulation signals in spreadsheet format
- A model of baroreflex blood pressure control (Simulink)

PROFESSIONAL SERVICE

International Society for Computerized Electrocardiology

Co-Chair 2018 Meeting, Program Chair 2019 Meeting

Journal of Electrocardiology

Executive Editor

Leiden Foundation for ECG Analysis SEAL

Chairman, 1995-2002

Reviewer

Acta Physiologica

American Heart Journal

American Journal of Cardiology

American Journal of Physiology

Applied Biochemistry and Biotechnology

Biocybernetics and Biomedical Engineering

Biomedical Signal Processing and Control

BMC Cardiovascular Disorders

British Medical Journal

Brain and Behavior

Canadian Journal of Physiology and Pharmacology

Clinical Autonomic Research

Clinical Interventions in Aging

Clinical Rehabilitation

Computer Methods and Programs in Biomedicine

Computing in Cardiology

Current Medical Research and Opinion

European Society of Cardiology

Heart

Heart Rhythm

IEEE Transactions on Biomedical Engineering

International Archives of Occupational and Environmental Health

International Journal of Cardiology

International Journal of Telemedicine and Applications

Journal of Applied Physiology

Journal of Cardiovascular Development and Disease

Journal of Cardiovascular Electrophysiology

Journal of Clinical Medicine
Journal of Electrocardiology
Journal of Physiology (The)
Journal of the American College of Cardiology – Clinical Electrophysiology
Medicina
Netherlands Heart Journal
Netherlands Heart Foundation
Pacing and Clinical Electrophysiology
PeerJ
Physiological Measurement
Physiological Research
Renal Failure
Research Letters in Signal Processing
The Lancet

GRANTS (Netherlands Heart Foundation)

NHS 1989.110
NHS 1990.090
NHS 1993.43.032
NHS 2001.177
NHS 2003.B094
NHS 2009.B097

SOCIETIES

Netherlands Society of Cardiology
Netherlands Heart Rhythm Association
European Society of Cardiology
European Society of Cardiology Working Group on e-Cardiology
Netherlands Society for Biophysics and Biomedical Technology

TRAINEES

(Leiden University, if not otherwise stated)

PhD thesis

C. Cato ter Haar (Medicine, 2020)
Agnese Sbröllini (Università Politecnica delle Marche, Ancona, IT; for the deep learning project, 2019)
Vivian P. Kamphuis (for the ECG-related subjects, Medicine, 2019)
Sum-Che Man (Medicine, 2016)
Stephanie Hillebrand (Medicine, 2015)

Maike G.J. Gademan (Medicine, 2009)
Bart Hooft van Huysduynen (Medicine, 2006)
Joost Frederiks (Medicine, 2001)
Marianne Bootsma (Medicine, 1995)
Marc J.A. Janssen (Medicine, 1993)

Master Thesis

Fatma Al-Sofi (Medicine, 2019)
Masih Amini (Medicine, 2019)
Krizia Ciccetti (Università Politecnica delle Marche, Ancona, IT, 2018)
Hugo Quaak (Medicine, 2018)
Jeanet de Raaf (Medicine, 2018)
Nicole Rijnsburger (Medicine, 2018)
Friso van Bokhorst (Medicine, 2017)
Pierre A.F.M. Grosveld (Medicine, 2017)
Marjolein C. De Jongh (Medicine, 2015)
Vivian P. Kamphuis (Medicine, 2012)
Cornelia C. ter Haar (Medicine, 2012)
Teunis Schuurman (Mechanical Engineering, Technical University of Delft, 2011)
Priscilla V. de Winter (Medicine, 2011)
Elena van den Akker (Medicine, 2010)
Sum-Che Man (Biomedical Sciences, 2007)
Harmen H.M. Draisma (Biomedical Sciences, 2005)
Hedde van de Vooren (Physics, 2004)
Annelies L.S. Schoneveld (Medicine, 2003)
Vanessa J. Valk (Medicine, 2003)
Maura Santunione (Bioengineering, University of Bologna, I, 2002)
Rosalie M.M. Kemps (Medicine, 2002)
Adriaan O. Kraaieveld (Medicine, 2002)
Natasha Dijkstra (Medicine, 2002)
Diana C.G. de Veld (Physics, 1998)
Anwar Ghafoerkhan (Medicine, 1998)
J.M.M. (Hanneke) Veldhuizen (Medicine, 1997)
Caroline A.H. Pfeiffer (Medicine, 1997)
Jeroen V. Levert (Medicine, 1997)
Mona Mazgani (Medicine, 1994)
Harm H. van Bolhuis (Biomedical Sciences, 1993)
Henriëtte ter Heide (Medicine, 1990)
Jan C. Looyen (Electronics, Eindhoven University of Technology, 1973)
Mart Hermans (Physics, Eindhoven University of Technology, 1972)

Bachelor level

Roderick W Treskes (Medicine, 2014)

Berbel B. L. M. IJkema (Medicine, 2013)

Chinar Rahmattulla (Medicine, 2011)

Annemijn M. Algra (Medicine, 2010)

Charlotte A. Schreurs (Medicine, 2010)

E.H. (Eunhyo) Kim (Biomedical Sciences, 2007)

M. Louisa Antoni (Medicine, 2004)

Omar Turhan (Informatics, The Hague University, 1995)

Ronald Baljeu (Informatics, The Hague University, 1993)

C. (Kees) Brobbel (Informatics, The Hague University, 1989)

Dick Hordijk (Electronics, Rotterdam University, 1973)

Pre-university College, Leiden University

Louise I. Burggraaf (2012)

T. (Dorine) W. Elffers (2012)

Floor M. Segeth (2012)

Femke M.C. Austie (2012)

Mariëlle B. Plug (2012)

PUBLICATIONS

According to Google Scholar:

- citations: 5702 (2341 since 2015)
- h-index: 36 (25)
- i10-index: 81 (53)

The Computing in Cardiology (Comput Cardiol) papers in this list can be accessed via <http://www.cinc.org/cinc-papers-on-line/>

*: corresponding author in multi-authored papers; first author in multi-authored papers in which no corresponding author is indicated

1. Lindow T, Pahlm O, Olson CW, Khoshnood A, Ekelund U, Carlsson M, **Swenne CA**, Man S, Engblom H. Diagnostic accuracy of the Electrocardiographic Decision Support - Myocardial Ischaemia (EDS-MI) algorithm in detection of acute coronary occlusion. *Eur Heart J Acute Cardiovasc Care* 2020;9(1_suppl):13-25
2. Kamphuis VP, Nassif M, Man SC, **Swenne CA**, Kors JA, Vink AS, Ten Harkel ADJ, Maan AC, Mulder BJM, de Winter RJ, Blom NA. Electrical remodeling after percutaneous atrial septal defect closure in pediatric and adult patients. *Int J Cardiol* 2019;285:32-39
3. Kamphuis VP, Raad D, Nassif M, **Swenne CA**, Blom NA, Ten Harkel ADJ. Electrocardiographic characteristics before and after correction of right-sided congenital heart defects in children and its relation to prognosis. *J Electrocardiol* 2019;52:53-58
4. Sbröllini A, De Jongh MC, Ter Haar CC, Treskes RW, Man S, Burattini L, **Swenne CA**. Serial electrocardiography to detect newly emerging or aggravating cardiac pathology: a deep-learning approach. *Biomed Eng Online* 2019;18:15
5. Ter Haar CC, Peters RJG, Bosch J, Sbröllini A, Gripenstedt S, Adams R, Bleijenberg E, Kirchhof CJHJ, Alizadeh Dehnavi R, Burattini L, de Winter RJ, Macfarlane PW, Postema PG, Man S, Scherptong RWC, Schalij MJ, Maan AC, **Swenne CA**. An initial exploration of subtraction electrocardiography to detect myocardial ischemia in the prehospital setting. *Ann Noninvasive Electrocardiol* 2019 Nov 10:e12722 [Epub ahead of print]
6. Van den Berg ME, Kors JA, van Herpen G, Bots ML, Hillege H, **Swenne CA**, Stricker BH, Rijnbeek PR. Normal values of QT variability in 10-s electrocardiograms for all ages. *Front Physiol* 2019;10:1272
7. Meijer FMM, Kies P, Jongbloed MRM, van Wijngaarden SE, **Swenne CA**, Man S, Schalij MJ, de Vries-Bouwstra JK, Vliegen HW. ECG derived ventricular gradient exceeds echocardiography in the early detection of pulmonary hypertension in scleroderma patients. *Int J Cardiol* 2018;273:203-206
8. Kamphuis VP, Blom NA, van Zwet EW, Man S, Ten Harkel ADJ, Maan AC, **Swenne CA**. Normal values of the ventricular gradient and QRS-T angle, derived from the pediatric electrocardiogram. *J Electrocardiol* 2018;51:490-495

9. Lindow T, Pahlm O, Olson CW, Khoshnood A, Ekelund U, Carlsson M, **Swenne CA**, Man S, Engblom H. Diagnostic accuracy of the electrocardiographic decision support - myocardial ischaemia (EDS-MI) algorithm in detection of acute coronary occlusion. *Eur Heart J Acute Cardiovasc Care* 2018 Apr 1;2048872618768081. doi: 10.1177/2048872618768081. [Epub ahead of print]
10. Sbröllini A, De Jongh MC, Ter Haar CC, Treskes RW, Man S, Burattini L, **Swenne CA**. Serial ECG analysis: absolute rather than signed changes in the spatial QRS-T angle should be used to detect emerging cardiac pathology. *Comput Cardiol* 2018;45:99-102
11. Starc V, **Swenne CA**. Trajectories of the single moving equivalent dipole in subjects with left fascicular block. *Comput Cardiol* 2018;45:296-299
12. Van den Berg ME, Rijnbeek PR, Niemeijer MN, Hofman A, van Herpen G, Bots ML, Hillege H, **Swenne CA**, Eijgelsheim M, Stricker BH, Kors JA. Normal values of corrected heart-rate variability in 10-second electrocardiograms for all ages. *Front Physiol* 2018;9:424
13. Atwater BD, Bacharova L, Pahlm O, **Swenne CA***. Special issue of the Journal of Electrocardiology to commemorate Dr. Galen Wagner (1939-2016). *J Electrocardiol* 2017; 50:1-2
14. De Jongh MC, Sbröllini A, Maan AC, Van der Velde ET, SchaliJ MJ, **Swenne CA***. Progression towards heart failure after myocardial infarction is accompanied by a change in the spatial QRS-T angle. *Comput Cardiol* 2017;44:292-342
15. Haeck ML, Kapel GF, Scherptong RW, **Swenne CA**, Maan AC, Bax JJ, SchaliJ MJ, Vliegen HW. Detection of elevated pulmonary pressures by the ECG-derived ventricular gradient: A comparison of conversion matrices in patients with suspected pulmonary hypertension. *J Electrocardiol* 2017;50:115-122
16. Lindow T, Olson CW, **Swenne CA**, Man S, Pahlm O. The Olson method for detection of acute myocardial ischemia in patients with coronary occlusion. *J Electrocardiol* 2017;50:74-81
17. Man S, Ter Haar CC, de Jongh MC, Maan AC, SchaliJ MJ, **Swenne CA***. Position of ST-deviation measurements relative to the J-point: Impact for ischemia detection. *J Electrocardiol* 2017;50:82-89
18. Medenwald D, **Swenne CA**, Frantz S, Nuding S, Kors JA, Pietzner D, Tiller D, Greiser KH, Kluttig A, Haerting J. Longitudinal association of short-term, metronome-paced heart rate variability and echocardiographically assessed cardiac structure at a 4-year follow-up: results from the prospective, population-based CARLA cohort. *Europace* 2017;19:2027-2035
19. Medenwald D, **Swenne CA**, Loppnow H, Kors JA, Pietzner D, Tiller D, Thiery J, Nuding S, Greiser KH, Haerting J, Werdan K, Kluttig A. Prognostic relevance of the interaction between short-term, metronome-paced heart rate variability, and inflammation: results from the population-based CARLA cohort study. *Europace* 2017;1:110-118
20. Nolte IM, Munoz ML, Tragante V, Amare AT, Jansen R, Vaez A, von der Heyde B, Avery CL, Bis JC, Dierckx B, van Dongen J, Gogarten SM, Goyette P, Hernesniemi J, Huikari V, Hwang SJ, Jaju D, Kerr KF, Kluttig A, Krijthe BP, Kumar J, van der Laan SW, Lyytikäinen LP, Maihofer AX, Minassian A, van der Most PJ, Müller-Nurasyid M, Nivard M, Salvi E, Stewart JD, Thayer JF, Verweij N, Wong A, Zabaneh D, Zafarmand MH, Abdellaoui A, Albarwani S, Albert C, Alonso A, Ashar F, Auvinen J, Axelsson T, Baker DG, de Bakker PIW, Barcella M, Bayoumi R,

Bieringa RJ, Boomsma D, Boucher G, Britton AR, Christophersen I, Dietrich A, Ehret GB, Ellinor PT, Eskola M, Felix JF, Floras JS, Franco OH, Friberg P, Gademan MGJ, Geyer MA, Giedraitis V, Hartman CA, Hemerich D, Hofman A, Hottenga JJ, Huikuri H, Hutri-Kähönen N, Jouven X, Juntila J, Juonala M, Kiviniemi AM, Kors JA, Kumari M, Kuznetsova T, Laurie CC, Lefrandt JD, Li Y, Li Y, Liao D, Limacher MC, Lin HJ, Lindgren CM, Lubitz SA, Mahajan A, McKnight B, Zu Schwabedissen HM, Milaneschi Y, Mononen N, Morris AP, Nalls MA, Navis G, Neijts M, Nikus K, North KE, O'Connor DT, Ormel J, Perz S, Peters A, Psaty BM, Raitakari OT, Risbrough VB, Sinner MF, Siscovick D, Smit JH, Smith NL, Soliman EZ, Sotoodehnia N, Staessen JA, Stein PK, Stilp AM, Stolarz-Skrzypek K, Strauch K, Sundström J, **Swenne CA**, Syvänen AC, Tardif JC, Taylor KD, Teumer A, Thornton TA, Tinker LE, Uitterlinden AG, van Setten J, Voss A, Waldenberger M, Wilhelmsen KC, Willemsen G, Wong Q, Zhang ZM, Zonderman AB, Cusi D, Evans MK, Greiser HK, van der Harst P, Hassan M, Ingelsson E, Järvelin MR, Kääb S, Kähönen M, Kivimäki M, Kooperberg C, Kuh D, Lehtimäki T, Lind L, Nievergelt CM, O'Donnell CJ, Oldehinkel AJ, Penninx B, Reiner AP, Riese H, van Rooij AM, Rioux JD, Rotter JI, Sofer T, Stricker BH, Tiemeier H, Vrijkkotte TGM, Asselbergs FW, Brundel BJJM, Heckbert SR, Whitsel EA, den Hoed M, Snieder H, de Geus EJC. Genetic loci associated with heart rate variability and their effects on cardiac disease risk. *Nat Commun* 2017;8:15805. Erratum in: *Nat Commun* 2017;8:16140.

21. Pahlm O, **Swenne CA**, Man S, Fakhri Y, Atwater BD, Bacharova L, Bang L, Birnbaum Y, Carlsson E, Clemmensen P, Engblom H, Gettes LS, Grande P, Hakacova N, Holmvang L, Jurlander B, Loring Z, Pahlm U, Pettersson J, Ringborn M, Risum N, Sejersten-Ripa M, Sörnmo L, Strauss DG, Zusterzeel R, Warren SG. Dr. Galen Wagner (1939-2016) as an academic writer: an overview of his peer-reviewed scientific publications. *J Electrocardiol* 2017;50:47-73
22. Starc V, **Swenne CA**. Spatial distribution and orientation of a single moving dipole computed in 12-lead ECGs of a healthy population using a spherically bounded model. *Comput Cardiol* 2017;44:242-277
23. **Swenne CA***, Pahlm O, Atwater BD, Bacharova L. Galen Wagner, M.D., Ph.D. (1939-2016) as international mentor of young investigators in electrocardiology. *J Electrocardiol* 2017;50:21-46.
24. Burattini L, Man S, Fioretti S, Di Nardo F, **Swenne CA**. Heart Rate-Dependent Hysteresis of T-Wave Alternans in Primary Prevention ICD Patients. *Ann Noninvasive Electrocardiol* 2016;21:460-469
25. Couperus LE, Vliegen HW, Henkens IR, Maan AC, Treskes RW, De Vries JK, Schouffoer AA, **Swenne CA**, Schalij MJ, Scherptong RW. Electrocardiographic detection of pulmonary hypertension in patients with systemic sclerosis using the ventricular gradient. *J Electrocardiol* 2016;49:60-68
26. De Jongh MC, Maan AC, Van der Velde ET, **Swenne CA**. Serial ECG analysis after myocardial infarction: when heart failure develops, the ECG becomes increasingly discordant. *Comput Cardiol* 2016;43:408-411
27. Giuliani C, **Swenne CA**, Man S, Agostinelli A, Fioretti S, Di Nardo F, Burattini L. Predictive Power of f99 Repolarization Index for the Occurrence of Ventricular Arrhythmias. *Ann Noninvasive Electrocardiol* 2016;21:152-160.

28. Pahlm O, **Swenne CA**, Ugander M, Warren SG, Wagner GS. Scientific STAFF and MALT meetings—past, present, and future. *J Electrocardiol* 2016;49:259-262.
29. Seibert E, Zohles K, Ulrich C, Kluttig A, Nuding S, Kors JA, **Swenne CA**, Werdan K, Fiedler R, Girndt M. Association between autonomic nervous dysfunction and cellular inflammation in end-stage renal disease. *BMC Cardiovasc Disord* 2016;16:210 (11 pp)
30. **Swenne CA**, Wagner GS. Association between autonomic nervous dysfunction and cellular inflammation in end-stage renal disease. MALT/STAFF 2015 symposium. *J Electrocardiol* 2016;49:752.
31. Ter Haar CC, Man SC, Maan AC, Schalij MJ, **Swenne CA***. Subtraction electrocardiography: Detection of ischemia-induced ST displacement without the need to identify the J point. *J Electrocardiol* 2016;49:316-322.
32. **Swenne CA***. Mechanisms of exercise-recovery hysteresis in the ECG. *J Electrocardiol* 2015;48:1006-1009
33. **Swenne CA***. Atherosclerosis at your fingertips? *Neth Heart J* 2015;23:466-467
34. De Jongh MC, Kamphuis VP, Man S, Maan S, Vliegen HW, Swenne CA*. Electrocardiographic detection and monitoring of pulmonary hypertension. *Comput Cardiology* 2015;42:541-544
35. Giuliani C, **Swenne CA**, Man S, Fioretti S, Di Nardo F. Logistic regression to enhance risk assessment by left ventricular ejection fraction and f99. *Comput Cardiol* 2015;42:657-660
36. Man S, Ter Haar CC, Maan AC, Schalij MJ, **Swenne CA***. The dependence of the STEMI classification on the position of ST-deviation measurement instant relative to the J point. *Comput Cardiol* 2015;42:837-840
37. Burattini L, Man S, Fioretti S, Di Nardo F, **Swenne CA**. T-wave alternans hysteresis on heart rate. *Comput Cardiol* 2015;42:1205-1208
38. Man S, Maan AC, Schalij MJ, **Swenne CA***. Vectorcardiographic diagnostic & prognostic information derived from the 12-lead electrocardiogram: Historical review and clinical perspective. *J Electrocardiol* 2015;48:463-475.
39. Kamphuis VP, Wagner GS, Pahlm O, Man S, Olson CW, Bacharova L, **Swenne CA***. Comparison of model-based and expert-rule based electrocardiographic identification of the culprit artery in patients with acute coronary syndrome. *J Electrocardiol* 2015;48:483-489.
40. De Jongh MC, Ter Haar CC, Man S, Treskes RW, Maan AC, Schalij MJ, **Swenne CA***. Intra-individual ECG changes over 25 years: How long can elective ECGs be used as reference for acute ischemia detection? *J Electrocardiol* 2015;48:490-497.
41. Treskes RW, Ter Haar CC, Man S, De Jongh MC, Maan AC, Wolterbeek R, Schalij MJ, Wagner GS, **Swenne CA***. Performance of ST and ventricular gradient difference vectors in electrocardiographic detection of acute myocardial ischemia. *J Electrocardiol* 2015;48:498-504.
42. **Swenne CA**. Improved STEMI diagnosis by serial ECG analysis. *J Electrocardiol*. 2015;48:99-100.
43. Hillebrand S, **Swenne CA**, Gast KB, Maan AC, Le Cessie S, Jukema JW, Rosendaal FR, Den Heijer M, De Mutsert R. The role of insulin resistance in the association between body fat and autonomic function. *Nutr Metab Cardiovasc Dis* 2015;25:93-99.

44. Burattini L, Man S, Fioretti S, Di Nardo F, **Swenne CA**. Dependency of exercise-induced T-wave alternans predictive power for the occurrence of ventricular arrhythmias from heart rate. *Ann Noninvasive Electrocardiol* 2014;20:345-354
45. Giuliani C, **Swenne CA**, Man S, Agostinelli A, Burattini L. Ventricular arrhythmias assessment: a new repolarization index of risk. *Comput Cardiol* 2014;41:169-172.
46. T-wave alternans rate of change with exercise for cardiac risk assessment. Burattini L, Man S, Ottaviano G, Fioretti S, Di Nardo F, **Swenne CA**. *Comput Cardiol* 2014;41:177-180.
47. De Jongh MC, Ter Haar CC, Man S, Van de Heide MFJ, Treskes RW, Maan AC, SchaliJ MJ, **Swenne CA***. Changes in the ST- and ventricular gradient vectors over a period of 25 years. *Comput Cardiol* 2014;41:385-388.
48. Treskes RW, Ter Haar CC, Man S, De Jongh MC, Van der Heide MFJ, Maan AC, SchaliJ MJ, **Swenne CA***. Reproducibility of ST and ventricular gradient vectors. *Comput Cardiol* 2014;41:633-636.
49. IJkema BB, Bonnier JJ, Schoors D, SchaliJ MJ, **Swenne CA***. Role of the ECG in initial acute coronary syndrome triage: primary PCI regardless presence of ST elevation or of non-ST elevation. *Neth Heart J* 2014;22:484-490
50. Rijnbeek PR, van Herpen G, Bots ML, Man S, Verweij N, Hofman A, Hillege H, Numans ME, **Swenne CA**, Witteman JC, Kors JA. Normal values of the electrocardiogram for ages 16-90 years. *J Electrocardiol* 2014;47:914-921
51. **Swenne CA***. Diverging opinions about shared decisions. *Neth Heart J* 2014;22:334-335.
52. Ter Haar CC, Maan AC, SchaliJ MJ, **Swenne CA***. Directionality and proportionality of the ST and ventricular gradient difference vectors during acute ischemia. *J Electrocardiol* 2014;47:500-504.
53. Hillebrand S, de Mutsert R, Christen T, Maan AC, Jukema JW, Lamb HJ, de Roos A, Rosendaal FR, den Heijer M, **Swenne CA**; NEO Study Group. Body fat, especially visceral fat, is associated with electrocardiographic measures of sympathetic activation. *Obesity* 2014;22:1553-1559.
54. **Swenne CA***. Psychosocial distress under pressure. *Neth Heart J* 2014;22:70
55. Man S, Rahmattulla C, Maan AC, van der Putten NH, Dijk WA, van Zwet EW, van der Wall EE, SchaliJ MJ, Gorgels AP, **Swenne CA***. Acute coronary syndrome with a totally occluded culprit artery: relation of the ST injury vector with ST-elevation and non-ST elevation ECGs. *J Electrocardiol* 2014;47:183-190
56. Kamphuis VP, Haeck ML, Wagner GS, Maan AC, Maynard C, Delgado V, Vliegen HW, **Swenne CA***. Electrocardiographic detection of right ventricular pressure overload in patients with suspected pulmonary hypertension. *J Electrocardiol* 2014;47:175-182
57. **Swenne CA***. Beyond lipid lowering: pleiotropic effects of statins in heart failure. *Neth Heart J* 2013;21:406-407
58. Ter Haar CC, Maan AC, Warren SG, Ringborn M, Horáček BM, SchaliJ MJ, **Swenne CA***. Difference vectors to describe dynamics of the ST segment and the ventricular gradient in acute ischemia. *J Electrocardiol* 2013;46:302-311
59. Gademan MG, van Exel HJ, van de Vooren H, Haest JC, van Pelt J, van der Laarse A, Cannegieter SC, Lucas CM, Somer S, Verwey HF, SchaliJ MJ, van der Wall EE, **Swenne CA***. Exercise-resembling effects of periodic somatosensory stimulation in heart failure. *Int J Cardiol* 2013;168:3327-3333

60. Van der Laarse A, Cobbaert CM, Gorgels AP, **Swenne CA**. Will future troponin measurement overrule the ECG as the primary diagnostic tool in patients with acute coronary syndrome? *J Electrocardiol* 2013;46:312-317
61. Schuurman T, Rixen DJ, **Swenne CA**, Hinnen JW. Feasibility of Laser Doppler Vibrometry as potential diagnostic tool for patients with abdominal aortic aneurysms. *J Biomech* 2013;46:1113-1120
62. Hillebrand S, Gast KB, de Mutsert R, **Swenne CA**, Jukema JW, Middeldorp S, Rosendaal FR, Dekkers OM. Heart rate variability and first cardiovascular event in populations without known cardiovascular disease: meta-analysis and dose-response meta-regression. *Europace* 2013;15:742-749
63. Burattini L, Man S, **Swenne CA**. Response to Dr. Madias' comments on "T-wave alternans by a 16-lead electrocardiogram system". *Ann Noninvasive Electrocardiol* 2013;18:100-101
64. Burggraaf JL, Elffers TW, Segeth FM, Austie FM, Plug MB, Gademan MG, Maan AC, Man S, de Muynck M, Soekha T, Simonsz A, van der Wall EE, Schalij MJ, **Swenne CA***. Neurocardiological differences between musicians and control subjects. *Neth Heart J* 2013;21:183-188
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