

Thomas Hammershaimb Mosbech - DTU Orbit (12/08/2016)

Thomas Hammershaimb Mosbech

Organisations

Research Assistant, Department of Applied Mathematics and Computer Science

27/12/2012 → 03/09/2013 Former

tmos@dtu.dk

VIP

Research Assistant, Department of Informatics and Mathematical Modeling

01/04/2008 → 03/09/2013 Former

tm@imm.dtu.dk

VIP

DTU Data Analysis

25/02/2012 → 18/02/2013 Former

VIP

Department of Applied Mathematics and Computer Science

06/05/2013 → 31/10/2013 Former

tmos@dtu.dk

VIP

Publications:

Vanskeligheder med at nå terapeutiske mål for blodtryk og plasmalipider hos patienter med type 2-diabetes i almen praksis

General information

State: Published

Organisations: Department of Applied Mathematics and Computer Science , Department of Informatics and Mathematical Modeling, DTU Data Analysis, Aarhus University Hospital

Authors: Tang Knudsen, S. (Ekstern), Mosbech, T. H. (Intern), Hansen, B. (Ekstern), Kønig, E. (Ekstern), Johnsen, P. C. (Intern), Kamper, A. (Ekstern)

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Main Research Area: Technical/natural sciences

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BFI (2015): BFI-level 1

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BFI (2014): BFI-level 1

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BFI (2013): BFI-level 1

Scopus rating (2013): 0.14 0.125

ISI indexed (2013): ISI indexed no

BFI (2012): BFI-level 1

Scopus rating (2012): 0.144 0.15

ISI indexed (2012): ISI indexed no

BFI (2011): BFI-level 1

Scopus rating (2011): 0.142 0.157

ISI indexed (2011): ISI indexed no

BFI (2010): BFI-level 1

Scopus rating (2010): 0.157 0.17

BFI (2009): BFI-level 1

Scopus rating (2009): 0.156 0.196

BFI (2008): BFI-level 1

Scopus rating (2008): 0.152 0.169

Scopus rating (2007): 0.142 0.157

Scopus rating (2006): 0.139 0.162

Scopus rating (2005): 0.141 0.174

Scopus rating (2004): 0.17 0.208

Scopus rating (2003): 0.145 0.181

Scopus rating (2002): 0.142 0.139

Scopus rating (2001): 0.145 0.186

Scopus rating (2000): 0.139 0.192

Scopus rating (1999): 0.142 0.179

Original language: Danish

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Source-ID: 2200460136

Publication: Research - peer-review › Journal article – Annual report year: 2014

Exercise training favors increased insulin-stimulated glucose uptake in skeletal muscle in contrast to adipose tissue: a randomized study using FDG PET imaging

Physical exercise increases peripheral insulin sensitivity, but regional differences are poorly elucidated in humans. We investigated the effect of aerobic exercise training on insulin-stimulated glucose uptake in five individual femoral muscle groups and four different adipose tissue regions, using dynamic (femoral region) and static (abdominal region) 2-deoxy-2-[¹⁸F]fluoro-d-glucose (FDG) PET/CT methodology during steady-state insulin infusion (40 mU·m⁻²·min⁻¹). Body composition was measured by dual X-ray absorptiometry and MRI. Sixty-one healthy, sedentary [Vo₂max 36(5) ml·kg⁻¹·min⁻¹; mean(SD)], moderately overweight [BMI 28.1(1.8) kg/m²], young [age: 30(6) yr] men were randomized to sedentary living (CON; n = 17 completers) or moderate (MOD; 300 kcal/day, n = 18) or high (HIGH; 600 kcal/day, n = 18) dose physical exercise for 11 wk. At baseline, insulin-stimulated glucose uptake was highest in femoral skeletal muscle followed by intraperitoneal visceral adipose tissue (VAT), retroperitoneal VAT, abdominal (anterior + posterior) subcutaneous adipose tissue (SAT), and femoral SAT (P < 0.0001 between tissues). Metabolic rate of glucose increased similarly (~30%) in the two exercise groups in femoral skeletal muscle (MOD 24[9, 39] μmol·kg⁻¹·min⁻¹, P = 0.004; HIGH 22[9, 35] μmol·kg⁻¹·min⁻¹, P = 0.003) (mean[95% CI]) and in five individual femoral muscle groups but not in femoral SAT. Standardized uptake value of FDG decreased ~24% in anterior abdominal SAT and ~20% in posterior abdominal SAT compared with CON but not in either intra- or retroperitoneal VAT. Total adipose tissue mass decreased in both exercise groups, and the decrease was distributed equally among subcutaneous and intra-abdominal depots. In conclusion, aerobic exercise training increases insulin-stimulated glucose uptake in skeletal muscle but not in adipose tissue, which demonstrates some interregional differences.

General information

State: Published

Organisations: Department of Applied Mathematics and Computer Science, University of Copenhagen, Copenhagen University Hospital

Authors: Reichkendler, M. H. (Ekstern), Auerbach, P. (Ekstern), Rosenkilde, M. (Forskerdatabase), Christensen, A. N. (Ekstern), Holm, S. (Ekstern), Petersen, M. B. (Ekstern), Lagerberg, A. (Ekstern), Larsson, H. B. W. (Ekstern), Rostrup, E. (Ekstern), Mosbech, T. H. (Intern), Sjödin, A. (Ekstern), Kjaer, A. (Ekstern), Ploug, T. (Forskerdatabase), Hoejgaard, L. (Ekstern), Stallknecht, B. (Ekstern)

Pages: E496-E506

Publication date: 2013

Main Research Area: Technical/natural sciences

Publication information

Journal: American Journal of Physiology: Endocrinology and Metabolism

Volume: 305

Issue number: 4

ISSN (Print): 0193-1849

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BFI (2015): BFI-level 2

Scopus rating (2015): 2.465 1.057

BFI (2014): BFI-level 2

Scopus rating (2014): 2.098 1.164
BFI (2013): BFI-level 2
Scopus rating (2013): 2.421 1.379
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): 2.414 1.43
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): 2.518 1.435
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): 2.37 1.292
BFI (2009): BFI-level 2
Scopus rating (2009): 2.32 1.267
BFI (2008): BFI-level 1
Scopus rating (2008): 2.177 1.133
Scopus rating (2007): 2.262 1.231
Scopus rating (2006): 2.411 1.329
Scopus rating (2005): 2.137 1.337
Scopus rating (2004): 2.194 1.335
Scopus rating (2003): 1.698 1.241
Scopus rating (2002): 1.662 1.306
Scopus rating (2001): 1.487 1.251
Scopus rating (2000): 1.578 1.275
Scopus rating (1999): 1.561 1.275
Original language: English

DOIs:

10.1152/ajpendo.00128.2013

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Publication: Research - peer-review › Journal article – Annual report year: 2013

Screening for microalbuminuria in patients with type 2 diabetes is incomplete in general practice

INTRODUCTION: National Danish guidelines recommend screening for microalbuminuria with assessment of urinary albumin/creatinine ratio at least annually in patients with type 2 diabetes. To which extent such screening is actually performed is not known. **MATERIAL AND METHODS:** A total of 2,057 patients with type 2 diabetes were randomly selected from 64 general practitioners (GPs) from different geographical areas of Denmark. Clinical and laboratory data on the individual patients were collected through the GPs' electronic medical patient records; particular emphasis was given to annual screening for microalbuminuria. **RESULTS:** The mean age of the patients was 66.2 +/- 11.6 years and 58.7% were male. Only 57.2% of the patients had been screened for microalbuminuria with any method within the preceding 12 months period; of these 76.0% had normo- and 21.0% had microalbuminuria, whereas 3.0% had overt proteinuria. In contrast, 97.6% of patients had had a minimum of one plasma-creatinine measurement within the past year. **CONCLUSION:** In Danish primary care, screening for microalbuminuria in type 2 diabetes is insufficiently implemented, whereas renal function is evaluated in almost all patients by plasma-creatinine measurements. The importance of diagnosing microalbuminuria in patients with type 2 diabetes needs to be emphasised.

General information

State: Published

Organisations: DTU Data Analysis, Department of Mathematics, Aarhus University, General Practice, Copenhagen University Hospital

Authors: Knudsen, S. T. (Ekstern), Mosbech, T. H. (Intern), Hansen, B. (Forskerdatabase), Kønig, E. (Ekstern), Johnsen, P. C. (Intern), Kamper, A. (Forskerdatabase)

Keywords: (MEDICINE, CHRONIC KIDNEY-DISEASE, MULTIFACTORIAL INTERVENTION, UNITED-STATES, NEPHROPATHY, PREVALENCE, REDUCTION)

Pages: A4502

Publication date: 2012

Main Research Area: Technical/natural sciences

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Journal: Ugeskrift for Laeger

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Ratings:

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BFI (2013): BFI-level 1

Scopus rating (2013): 0.14 0.125

ISI indexed (2013): ISI indexed no

BFI (2012): BFI-level 1

Scopus rating (2012): 0.144 0.15

ISI indexed (2012): ISI indexed no

BFI (2011): BFI-level 1

Scopus rating (2011): 0.142 0.157

ISI indexed (2011): ISI indexed no

BFI (2010): BFI-level 1

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Scopus rating (2008): 0.152 0.169

Scopus rating (2007): 0.142 0.157

Scopus rating (2006): 0.139 0.162

Scopus rating (2005): 0.141 0.174

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Original language: English

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http://www.danmedj.dk/portal/page/portal/danmedj.dk/dmj_forside/PAST_ISSUE/2012/DMJ_2012_09/A4502

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Publication: Research - peer-review › Journal article – Annual report year: 2012

Testosterone therapy decreases subcutaneous fat and adiponectin in aging men

OBJECTIVE: Testosterone therapy increases lean body mass and decreases total fat mass in aging men with low normal testosterone levels. The major challenge is, however, to determine whether the metabolic consequences of testosterone therapy are overall positive. We have previously reported that 6-month testosterone therapy did not improve insulin sensitivity. We investigated the effect of testosterone therapy on regional body fat distribution and on the levels of the insulin-sensitizing adipokine, adiponectin, in aging men with low normal bioavailable testosterone levels. **DESIGN:** A randomized, double-blinded, placebo-controlled study on 6-month testosterone treatment (gel) in 38 men, aged 60–78 years, with bioavailable testosterone 94 nmol/L. **METHODS:** Central fat mass (CFM) and lower extremity fat mass (LEFM) were measured by dual X-ray absorptiometry. Subcutaneous abdominal adipose tissue (SAT), visceral adipose tissue (VAT), and thigh subcutaneous fat area (TFA) were measured by magnetic resonance imaging. Adiponectin levels were measured using an in-house immunofluorometric assay. Coefficients (b) represent the placebo-controlled mean effect of intervention. **RESULTS:** LEFM was decreased (b=−0.47 kg, P=0.07) while CFM did not change significantly (b=−0.66 kg, P=0.10) during testosterone therapy. SAT (b=−3.0%, P=0.018) and TFA (b=−3.0%, P=0.018) were also decreased.

General information

State: Published

Organisations: DTU Data Analysis, Department of Informatics and Mathematical Modeling, Image Analysis and Computer Graphics, Odense University Hospital, Statens Serum Institut, Aarhus University

Authors: Frederiksen, L. (Ekstern), Højlund, K. (Forskerdatabase), Hougaard, D. M. (Ekstern), Mosbech, T. H. (Intern), Larsen, R. (Intern), Flyvbjerg, A. (Forskerdatabase), Frystyk, J. (Forskerdatabase), Brixen, K. (Forskerdatabase), Andersen, M. (Ekstern)

Pages: 469-476

Publication date: 2012

Main Research Area: Technical/natural sciences

Publication information

Journal: European Journal of Endocrinology

Volume: 166

Issue number: 3

ISSN (Print): 0804-4643

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BFI (2015): BFI-level 1

Scopus rating (2015): 1.579 1.416

BFI (2014): BFI-level 1

Scopus rating (2014): 0.112 0.0

BFI (2013): BFI-level 1

Scopus rating (2013): 0.135 0.251

ISI indexed (2013): ISI indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): 0.111 0.0

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): 1.587 1.471

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): 0.927 1.682

BFI (2009): BFI-level 1

Scopus rating (2009): 0.7 1.019

BFI (2008): BFI-level 1

Scopus rating (2008): 0.559 0.555

Scopus rating (2007): 0.923 1.342

Scopus rating (2006): 1.267 1.535

Scopus rating (2005): 0.52 0.758

Scopus rating (2004): 0.961 2.229

Scopus rating (2003): 0.712 1.672

Scopus rating (2002): 0.717 1.172

Scopus rating (2001): 0.192 0.168

Scopus rating (2000): 0.836 0.961

Scopus rating (1999): 0.755 0.913

Original language: English

DOIs:

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Publication: Research - peer-review › Journal article – Annual report year: 2012

Automatic Segmentation of Abdominal Adipose Tissue in MRI

This paper presents a method for automatically segmenting abdominal adipose tissue from 3-dimensional magnetic resonance images. We distinguish between three types of adipose tissue; visceral, deep subcutaneous and superficial subcutaneous. Images are pre-processed to remove the bias field effect of intensity in-homogeneities. This effect is estimated by a thin plate spline extended to fit two classes of automatically sampled intensity points in 3D. Adipose tissue pixels are labelled with fuzzy c-means clustering and locally determined thresholds. The visceral and subcutaneous adipose tissue are separated using deformable models, incorporating information from the clustering. The subcutaneous adipose tissue is subdivided into a deep and superficial part by means of dynamic programming applied to a spatial transformation of the image data. Regression analysis shows good correspondences between our results and total abdominal adipose tissue percentages assessed by dual-emission X-ray absorptiometry ($R^2 = 0.86$).

General information

State: Published

Organisations: Department of Informatics and Mathematical Modeling, DTU Data Analysis, Image Analysis and Computer Graphics, Steno Diabetes Centre

Authors: Mosbech, T. H. (Intern), Pilgaard, K. (Ekstern), Vaag, A. (Ekstern), Larsen, R. (Intern)

Keywords: (Tissue classification, Abdominal adipose tissue, MRI, Bias field correction, Image processing)

Pages: 501-511

Publication date: 2011

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Title of host publication: Image Analysis : 17th Scandinavian Conference, SCIA 2011 - Ystad, Sweden, May 2011 - Proceedings

Publisher: Springer

ISBN (Print): 978-3-642-21226-0

ISBN (Electronic): 978-3-642-21227-7

Series: Lecture Notes in Computer Science

Number: 6688

ISSN: 0302-9743

Main Research Area: Technical/natural sciences

Conference: 17th Scandinavian Conference on Image Analysis (SCIA), Ystad, Sweden, 23/05/2011 - 23/05/2011

DOIs:

10.1007/978-3-642-21227-7_47

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<http://www.maths.lth.se/vision/scia2011/>

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Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Computed Tomography in the Modern Slaughterhouse

The Danish pig meat industry has been seeing a growing international competition in the past years. In the quest to maintain both competitive prices and high product standards in spite of the higher Danish factor costs, a substantial effort is being put into innovation, research and development of technology. Recently, the use of X-ray computed tomography (CT) coupled with methods from image analysis has been introduced as a powerful means to optimise production, by providing detailed information on the raw materials. This thesis covers two aspects of the application of CT in the modern abattoir. In the first aspect we use CT to analyse the biological diversity of carcass populations. The images form the basis for a data-driven tissue deformation model. The results provide valuable input to assist the development of an automated robotic tool for trimming the rind off pig backs. The second aspect concerns measurements of each single carcass, to improve the raw material utilisation by individually adapted processing. Measurements performed online in the abattoir demand fast, robust and cost-effective imaging. We propose a tomographic reconstruction algorithm, enabling a substantial reduction of the subject-specific X-ray data needed to produce high quality images for accurate measurements. This is very beneficial for the abattoirs, as a reduction in acquired data translates directly into higher speed and a lower cost. The thesis demonstrates the great potential of CT as a technology for improving the yield of the Danish pig meat industry. An introduction of efficient online CT will especially open a vast number of possibilities for optimising the production.

General information

State: Published

Organisations: Image Analysis and Computer Graphics, Department of Informatics and Mathematical Modeling, DTU Data Analysis

Authors: Mosbech, T. H. (Intern), Ersbøll, B. K. (Intern), Larsen, R. (Intern)

Number of pages: 147

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Place of publication: Kgs. Lyngby, Denmark

Publisher: Technical University of Denmark (DTU)

Original language: English

Series: IMM-PHD-2011

Number: 258

ISSN: 0909-3192

Main Research Area: Technical/natural sciences

Electronic versions:

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Publication: Research › Ph.D. thesis – Annual report year: 2012

Differential Nongenetic Impact of Birth Weight Versus Third-Trimester Growth Velocity on Glucose Metabolism and Magnetic Resonance Imaging Abdominal Obesity in Young Healthy Twins

Context: Low birth weight is associated with type 2 diabetes, which to some extent may be mediated via abdominal adiposity and insulin resistance. Fetal growth velocity is high during the third trimester, constituting a potential critical window for organ programming. Intra-pair differences among monozygotic twins are instrumental in determining nongenetic associations between early environment and adult metabolic phenotype. Objective: Our objective was to investigate the relationship between size at birth and third-trimester growth velocity on adult body composition and glucose metabolism using intra-pair differences in young healthy twins. Methods: Fifty-eight healthy twins (42 monozygotic/16 dizygotic) aged 18-24 yr participated. Insulin sensitivity was assessed using hyperinsulinemic-euglycemic clamps. Whole-body fat was assessed by dual-energy x-ray absorptiometry scan, whereas abdominal visceral and sc fat (L1-L4) were assessed by magnetic resonance imaging. Third-trimester growth velocity was determined by repeated ultrasound examinations. Results: Size at birth was nongenetically inversely associated with adult visceral and sc fat accumulation but unrelated to adult insulin action. In contrast, fetal growth velocity during third trimester was not associated with adult visceral or sc fat accumulation. Interestingly, third-trimester growth was associated with insulin action in a paradoxical inverse manner. Conclusions: Abdominal adiposity including accumulation of both sc and visceral fat may constitute primary nongenetic factors associated with low birth weight and reduced fetal growth before the third trimester. Reduced fetal growth during vs. before the third trimester may define distinct adult trajectories of metabolic and anthropometric characteristics influencing risk of developing type 2 diabetes. (J Clin Endocrinol Metab 96: 2835-2843, 2011)

General information

State: Published

Organisations: DTU Data Analysis, Department of Informatics and Mathematical Modeling, Image Analysis and Computer Graphics, Steno Diabetes Centre, Novo Nordisk A/S, Copenhagen University Hospital, University of Copenhagen

Authors: Pilgaard, K. (Ekstern), Mosbech, T. H. (Intern), Grunnet, L. (Ekstern), Eiberg, H. (Ekstern), Van Hall, G. (Ekstern), Fallentin, E. (Ekstern), Larsen, T. (Ekstern), Larsen, R. (Intern), Poulsen, P. (Ekstern), Vaag, A. (Ekstern)

Pages: 2835-2843

Publication date: 2011

Main Research Area: Technical/natural sciences

Publication information

Journal: Journal of Clinical Endocrinology and Metabolism

Volume: 96

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ISSN (Print): 0021-972X

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BFI (2012): BFI-level 2

ISI indexed (2012): ISI indexed yes

BFI (2011): BFI-level 2

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 2

BFI (2009): BFI-level 1

BFI (2008): BFI-level 2

Original language: English

Electronic versions:

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DOIs:

10.1210/jc.2011-0577

Links:

<http://jcem.endojournals.org/content/96/9/2835.abstract>

Source: orbit

Source-ID: 314100

Publication: Research - peer-review › Journal article – Annual report year: 2011

Can Anisotropic Images be Upsampled?

General information

State: Published

Organisations: Image Analysis and Computer Graphics, Department of Informatics and Mathematical Modeling

Authors: Hansen, M. F. (Intern), Mosbech, T. H. (Intern), Ólafsdóttir, H. (Intern), Larsen, R. (Intern)

Publication date: 2010

Host publication information

Title of host publication: Proceedings of the International Conference on Computer Vision Theory and Applications

Main Research Area: Technical/natural sciences

Conference: 5th International Conference on Computer Vision Theory and Applications, Angers, France, 17/05/2010 - 17/05/2010

Source: orbit

Source-ID: 264313

Publication: Research - peer-review › Article in proceedings – Annual report year: 2010

An Efficient Data-driven Tissue Deformation Model

In this paper we present an efficient data-driven tissue deformation model. The work originates in process automation within the pig meat processing industry. In the development of tools for automating accurate cuts, knowledge on tissue deformation is of great value. The model is built from empirical data; 10 pig carcasses are subjected to deformation from a controlled source imitating the cutting tool. The tissue deformation is quantified by means of steel markers inserted into the carcass as a three-dimensional lattice. For each subject marker displacements are monitored through two consecutive computed tomography images - before and after deformation; tracing corresponding markers provides accurate information on the tissue deformation. To enable modelling of the observed deformations, the displacements are parameterised applying methods from point-based registration. The parameterisation is based on compactly supported radial basis functions, expressing the displacements by parameter sets comparable between subjects. For modelling the tissue deformation, principal component analysis is applied, treating each of the parameter sets as an observation. Using leave-one-out cross-validation, marker displacements are estimated in all subjects from the mean parameters. This yields an absolute error with mean 1.41 mm. The observed lateral movement of the loin muscle is analysed in relation to the principal modes, and the results are compared to manual measurements of carcass composition. We find an association between the first principal mode and the lateral movement. Furthermore, there is a link between this and the ratio of meat-fat quantity - a potentially very useful finding since existing tools for carcass grading and sorting measure equivalent quantities.

General information

State: Published

Organisations: Image Analysis and Computer Graphics, Department of Informatics and Mathematical Modeling, Danish Meat Research Institute

Authors: Mosbech, T. H. (Intern), Ersbøll, B. K. (Intern), Christensen, L. B. (Ekstern)

Pages: 1771-1777

Publication date: 2009

Host publication information

Title of host publication: 2009 IEEE 12th International Conference on Computer Vision Workshops (ICCV Workshops)

Publisher: IEEE

ISBN (Print): 978-1-4244-4442-7

Main Research Area: Technical/natural sciences

Conference: IEEE 12th International Conference on Computer Vision Workshops (ICCV Workshops), Kyoto, Japan, 27/09/2009 - 27/09/2009

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Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

Quantification and validation of soft tissue deformation

We present a model for soft tissue deformation derived empirically from 10 pig carcasses. The carcasses are subjected to deformation from a known single source of pressure located at the skin surface, and the deformation is quantified by means of steel markers injected into the tissue. The steel markers are easy to distinguish from the surrounding soft tissue in 3D computed tomography images. By tracking corresponding markers using methods from point-based registration, we are able to accurately quantify the magnitude and propagation of the induced deformation. The deformation is parameterised by radial basis functions with compact support. The parameterisation yields an absolute error with mean 0.20 mm, median 0.13 mm and standard deviation 0.21 mm (not cross validated). We use the parameterisation to form a statistical deformation model applying principal component analysis on the estimated deformation parameters. The model is successfully validated using leave-one-out cross validation by subject, achieving a sufficient level of precision using only the first two principal modes; mean 1.22 mm, median 1.11 mm and standard deviation 0.67 mm.

General information

State: Published

Organisations: Department of Informatics and Mathematical Modeling, Image Analysis and Computer Graphics, Department of Photonics Engineering

Authors: Mosbech, T. H. (Intern), Ersbøll, B. K. (Intern), Christensen, L. B. (Ekstern)

Number of pages: 8

Pages: 72621D-8

Publication date: 2009

Host publication information

Title of host publication: Medical Imaging 2009: Biomedical Applications in Molecular, Structural, and Functional Imaging

Volume: 7262

Publisher: SPIE - International Society for Optical Engineering

Editors: Xiaoping, P. H., Clough, A. V.

Edition: 1

Main Research Area: Technical/natural sciences

Conference: Quantification and validation of soft tissue deformation, Lake Buena Vista, FL, USA, 01/01/2009

DOIs:

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Publication: Research › Article in proceedings – Annual report year: 2009

Projects:

Online CT-scanning af slagtesvin

Department of Informatics and Mathematical Modeling

Period: 01/05/2008 → 28/09/2011

Number of participants: 7

Phd Student:

Mosbech, Thomas Hammershaimb (Intern)

Supervisor:

Christensen, Lars Bager (Intern)

Larsen, Rasmus (Intern)

Main Supervisor:

Ersbøll, Bjarne Kjær (Intern)

Examiner:

Conradsen, Knut (Intern)

Brandt, Sami (Ekstern)

Bünger, Lutz (Ekstern)

Financing sources

Source: Internal funding (public)

Name of research programme: 1/3 DTU-stip, 2/3 FUR/andet

Project: PhD