

A-65707

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**ARHEOLOOGILISED  
VÄLITÖÖD  
EESTIS**

**ARCHAEOLOGICAL  
FIELDWORK  
IN ESTONIA**

**2005**

Koostanud ja toimetanud  
*Ülle Tamla*

Muinsuskaitseamet  
Tallinn 2006

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Uus 18, Tallinn 10111, Eesti  
National Heritage Board  
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*Esikaas:* Hilisviikingiaegne kõrva- või oimurõngas.  
Rekonstruktsioon 2005. a. avastatud Ubina hõbeaardes  
sisalduva fragmendi põhjal. Joonistanud Kersti Siitan.  
*Cover:* Earring or temple ornament from Late Viking Age.  
Reconstruction based on the fragment from the silver board  
of Ubina discovered in 2005. Drawing by Kersti Siitan.

*Tagakaas:* Tartust Tähtvere tänavalt 2005. a. leitud 15. saj.  
haruldase savikannu kild.  
*Back cover:* Fragment of stoneware goblet from the 15<sup>th</sup> century.  
Stray find from Tartu, Tähtvere Street in 2005.

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*Kujundus ja küljendus:*

Jaana Kool

ISSN 1406-3972

TARTU ÜLIKOOLI  
RAAMATUKOGU  
SUNDFASEMLAR



# ARCHAEOLOGICAL EXCAVATIONS AT JÄGALA HILLFORT

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Jägala hillfort is located on the eastern bank of Jägala River, about 2 km south from the sea. The hillfort is situated on sandy elevating headland, which is surrounded by water from three sides. Only the hillfort's northern side, that is unprotected by nature, is fortified by a manmade rampart, which in some places can be up to 20 m wide and 7 m high, measured from the outside (2 m from the inside). The total area of the hillfort's yard is according to different calculations 27 000 – 28 000 sq. m (Spreckelsen 1924/1925, 16; Moora 1955, 53) which makes it the largest hillfort in Estonia.

Jägala hillfort is an extremely interesting archaeological site comprising settlement from different periods of prehistory. The preliminary results of the excavations carried out in 2005 confirm human activity on the hillfort in the Neolithic period and in the first half of the Iron Age (Pre-Roman and Roman Iron Age), however, no artefacts dated to the Late Iron Age were found. The archaeological excavations completed in 2005 were above all induced by scientific interest, though the initiative of local people was also of relevant importance. Although the article concentrates on the excavations carried out in 2005 (Johanson & Veldi 2005/2006), a short overview of previous archaeological research at the hillfort is offered as well.

## PREVIOUS ARCHAEOLOGICAL RESEARCH AT JÄGALA HILLFORT

The first archaeological excavations at Jägala hillfort took place in 1920–1923 and were conducted by Artur L. Spreckelsen, Adolf Friedenthal and Aarne Michaël Tallgren. In 1922 a part of the hillfort was figuratively destroyed by the dam construction of Jägala Factory (*Jaggowal Fabrik*), which also stressed the need for archaeological research (Spreckelsen 1924/1925, 16).

A. L. Spreckelsen opened several ditches on the hillfort, focusing on the northern rampart. Although the exact locations of these ditches are unknown, the different layers of the hillfort's rampart distinguished by Spreckelsen give a good starting point for interpreting the results of the 2005 excavations. The layers of the hillfort's northern rampart seen by Spreckelsen were as follows: the most upper layer



consisted of limestone slabs underneath of which was an unevenly thick layer of sand that was followed by a sooty black soil, which covered a layer of yellow sporadically burnt sand. In several ditches the sooty black soil contained charred wood, and in two places thick piles of heavily burnt fist-sized stones were found (Spreckelsen 1924/1925, 16–20). The find material included both Iron Age pottery and ceramics dated to the Stone Age. The most intensive traces of the Stone Age settlement were discovered from the western part of the hillfort that revealed a sandy depression containing a lot of Neolithic pottery sherds and residue from quartz and flint working. The Neolithic ceramics included pottery sherds ornamented with comb impressions and pits, also numerous sherds with notches and grooves were found. Near the sandy feature almost a whole typical comb ware vessel was unearthed (Jaanits *et al.* 1982, 75, Fig. 51). Unfortunately this part of the hillfort was destroyed in the summer of 1922 during the construction works. According to Spreckelsen's vision the oldest stage in the rampart's construction consisted of wooden fortification, which was burnt down, and after that covered with sand. During the second stage of the rampart's construction the sand mound was fortified with limestone plates (Spreckelsen 1924/1925, 16–20). Spreckelsen assumed that besides the obvious Stone Age settlement the hillfort was mainly used during the Viking Age and at the beginning of the 13<sup>th</sup> century.

Later Erik Laid (1923, 69) and Harri Moora (1955, 50–51, 53) have tried to interpret Spreckelsen's excavation results in order to date the hillfort's Iron Age fortifications more precisely. In his article about hillforts in Estonia, Harri Moora (1955) compared ceramics found from Jägala hillfort with those found from Koila concluding that both hillforts came into use at the same time, presumably some time near the birth of Christ. The youngest find from the hillfort is a sheet fibula (AI 3849) found by Erik Laid in 1939 as a stray find. The brooch dated to the 7<sup>th</sup> century originates somewhere from the Dnepr region, and according to Moora (1955, 53) proves continuous settlement on the hillfort at least until that point. Although Moora believed that the site was inhabited for some time even after that, he preferred not to date the end of settlement.

Since the end of the 1990s Jägala hillfort has again aroused the interest of archaeologists. Due to the construction designs of a new hydropower plant, the following research on the hillfort have all been connected with various monitoring works. In 1999 a row of trial pits under supervision of Ain Lavi was dug in the southern part of the hillfort (Lavi 1999). Nothing but two pieces of iron slag were found. Radiocarbon dating from one of the pits gave a result 531–603 AD, which supports Moora's assumption that the hillfort might have been used continuously until the 7<sup>th</sup> century.



Some additional trial pits were made in 2001 by Tael Ltd. in order to confirm the existence of cultural layer directly north from the hillfort on a potential prehistoric settlement site. No archaeological artefacts were found from the 33 trial pits, which were made to assure that the projected new road to hydroelectric power station would not damage cultural layer of the settlement site. The fieldwork also confirmed the lack of cultural layer on the foot of the hillfort's northern rampart (Smirnov & Jaanits 2001).

## THE EXCAVATIONS OF 2005

In 2005 an excavation area of 45 sq. m was opened on the north-western part of the northern rampart (Fig. 1:A) with the objective to get a better idea of the ram-

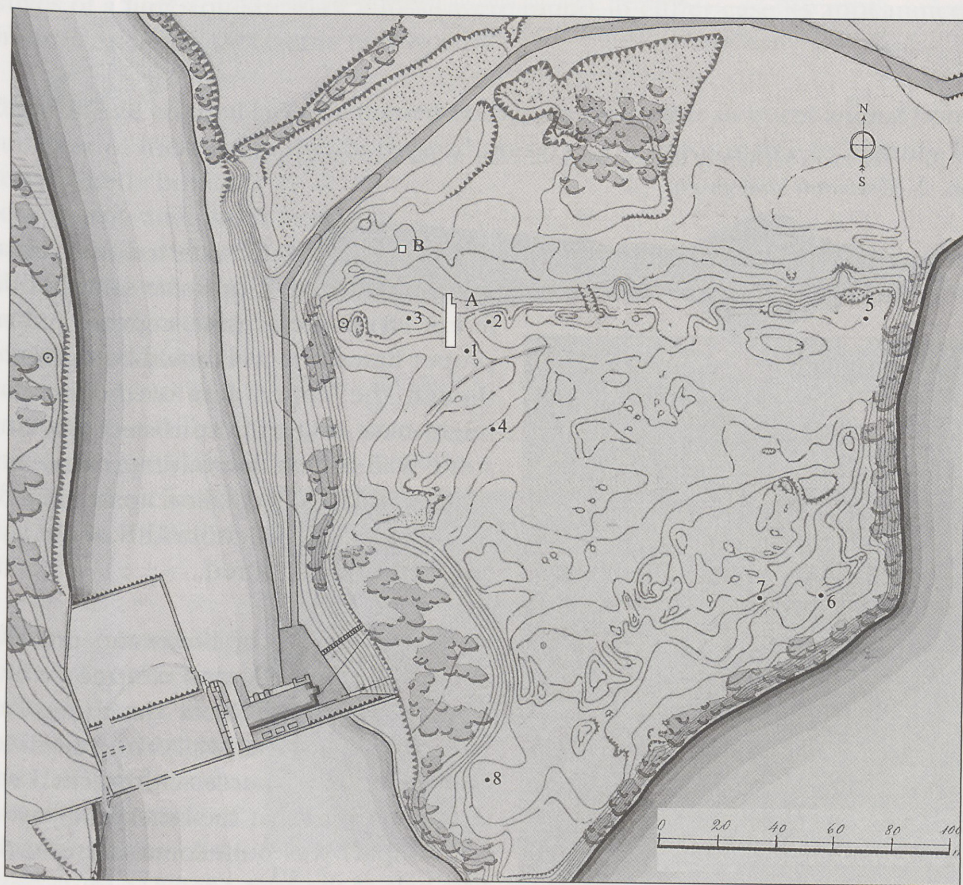


Fig. 1. The locations of the excavations of 2005.

Joon. 1. 2005. aasta kaevandite asendiskeem.



part's construction stages. An additional small trial excavation of 4 sq. m, located some 30 m north-west from the main excavation area (Fig. 1: B), was opened on the foot of the northern rampart. Although a limestone wall of a 20<sup>th</sup> century building with several modern artefacts was revealed, no prehistoric cultural layer was discovered.

## Iron Age Hillfort

Most of the excavation area was covered with loose sand, turf layer (1) was present only in places (Fig. 2). Almost immediately after some centimetres of sand

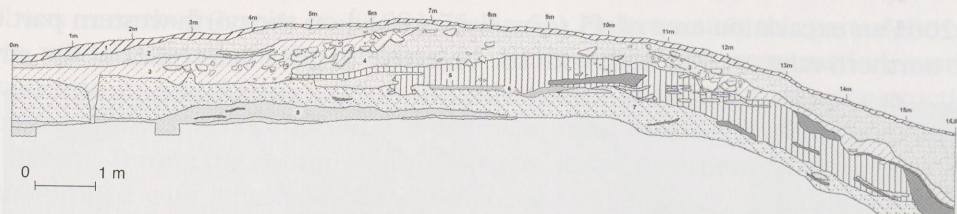


Fig. 2. The cross-section of the excavation. View to the western profile.  
Joon. 2. Kaevandi lääneprofiil.

were removed, sporadically placed limestone plates (3) started to reveal. Altogether eight layers of limestone were distinguished. It must be said that different layers were quite uneven, and no proper limestone wall could be detected,



Fig. 3. The third layer of the limestone wall.  
Joon. 3. Väljapuhastatud paemüüri III kiht.

though the upper part of the rampart might have originally consisted of a limestone wall, which due to time, nature and human activity had fallen apart (Fig. 3). The original height and width of the wall could not be measured.

Under the layers of limestone revealed about a 70 cm thick sand ramp (4), which was presumably built at the same time with the limestone wall. The few finds (mainly pottery sherds with striated surface) indicated that the limestone part of the rampart was built somewhere in the first half of the Iron Age.



After the sand ramp was removed, dark grey sooty cultural layer was unearthed (5). The dark grey layer was about 20–25 cm thick, and consisted of sooty sand containing a lot of charcoal and Iron Age potsherds (numbering 466). The Iron Age pottery is all made without potter's wheel, the clay is almost unexceptionally mixed with rough stone debris, organic matter is very rarely used. In one case an impression of a burnt grain or a seed was found in the sherd. The sherds gathered are predominantly very small which might explain the insignificant number of rim sherds – only five of these were found, mostly even, but in one case the rim was bent outwards. More than one third (160) of all the pottery sherds had the outer surface striated. Ornamentation was present on only one fragment and the decoration consisted of three shallow pits. Only two iron artefacts were gathered from the whole area: a horse-shoe nail and a small socketed arrowhead (Fig. 4), probably dating from the Pre-Roman or the Roman Iron Age. In addition two halves of a limestone bead or a fossil were found, in either case its appearance in the Iron Age cultural layer is noteworthy.

The Iron Age cultural layer contained both burnt as well as unburnt animal bones, but most of these were due to the bad preservation not possible to identify. The determined bones, both burnt and unburnt, included those of domestic animals: cattle, sheep/goat and horse. However, a burnt toe bone of a seal was found from the Iron Age layer between the charred logs as well (Maldre 2006).

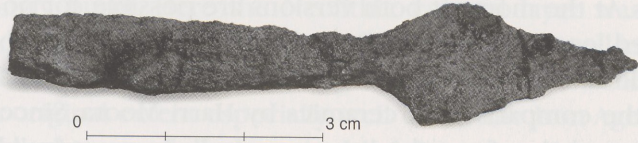


Fig. 4. The socketed iron arrowhead from the Iron Age cultural layer of Jägala settlement site.

Joon. 4. Putkega rauast nooleots jägala asulakoha rauaaegsest kultuurikibist.



Fig. 5. Charred logs and the stack of burnt stones in the northern part of the excavation.

Joon. 5. Söestunud tukid ja kivistik kaevandi põhjaosas.

The most intriguing finds from the grey cultural layer were the remains of the wooden fortification and a small stack of heavily burnt fist-sized stones (Fig. 5). The wooden con-



struction consisted of charred horizontal logs, that were spread over an area of five meters, placed across the northern third of the excavation. The largest log was about 25–30 cm thick and at least 3 m long, though its exact length could not be measured, for both ends of the log extended out of the excavation area. The southern side of the log was supported by a pile of small burnt stones, that were placed in three layers; the pile was about 90 cm thick and 1.20 m wide. Although the small stones and the wooden construction were stratigraphically connected, the exact function of the stones remains unknown. It is quite clear that the stones were too small to form a backing construction for the wooden fortification. Similar small stacks of burnt stones have been found from Pada II hillfort (Tamla 1992, 20–21) and from the hillfort of Peedu (Moora 1939, 109–110). In both cases the stones were primarily interpreted as throwing stones, collected on the wooden fortification to be used against the attacks of the enemy. In the case of Jägala this also seems to be the most logical explanation.

Due to lack of information the exact appearance of the wooden construction remains unclear. The charred logs unearthed during the excavations of 2005 point out that the fortification consisted of horizontal logs that were either 1) placed between vertical posts or 2) formed a so called “dog’s neck” in the corners. At the moment both versions are possible, for no massive postholes or cornered logs were found. The radiocarbon sample taken from one of the logs gave a calibrated result 130 BC – 60 AD, which also supports the hillfort’s dating based on the comparison of ceramics by Harri Moora. Since there is no proper radiocarbon dating from the limestone wall, its exact building time is unknown, but the stratigraphy and similar pottery sherds refer that the gap between the wooden fortification and the sand/limestone rampart cannot be too big. As there are no certain finds from the Middle Iron Age, except for the fibula found by Erik Laid, it is questionable whether the hillfort was continuously used until that time.

### Stone Age Settlement Site

In parallel with the dark grey Iron Age cultural layer under the rampart, in the southern half of the excavation area a reddish brown Stone Age layer (7) was unearthed. The upper elevation of the 20–30 cm thick layer was measured approximately 17.5 meters above mean sea level (amsl). As suggested by Erik Laid already in 1923, the Stone Age settlement was situated on a higher headland of 15–18 meters amsl (Laid 1923, 69). The excavations of 2005 confirmed that the Stone Age habitation in this part of the future hillfort formed on the elevation between 17–18 meters amsl, which according to the shore-displacement chronology dates the beginning of the settlement to approximately 4000–3900 years



cal BC. During the Middle Neolithic Typical Combed Ware Culture period the site was situated on an island in the Litorina sea or directly on its shore by a small lagoon (Kriiska 2001). During the Limnea Sea phase the water retreated, and Jägala River started to flow along the western side of the settlement site which was nevertheless still intensively used.

Although the layer was relatively rich in findings, only a few specific features were possible to locate. A single fire-pit was identified, measuring 45 cm in diameter depressed in the virgin soil for at least by 30–35 cm. Charcoal as well as pottery sherds and burnt bones were gathered from the pit. In addition at least two household pits containing sooty greyish sand were discovered. In diameter the pits were measured 25–40 cm, both had been deepened into the virgin soil for about 40–60 cm. The pits contained some charcoal, burnt animal bones and a few pottery sherds.

The Stone Age cultural layer followed the Iron Age layer in the northern part of the excavation plot as well, thus making the extent of the preserved Neolithic cultural layer approximately 30 sq. m of the excavated area. Under the rampart and directly north from that the upper horizon of the Stone Age layer was greyish white and probably strongly burnt. Here the Neolithic cultural layer was the thickest and richest in finds, including mainly sherds of both typical as well as late comb ware and quartz flakes and blades. According to the finds, the Neolithic layer had preserved to its original extent especially well under the Iron Age hillfort rampart, in the most northern and southern ends of the excavation area no Stone Age layer could be detected.

The find material from the Neolithic layer mostly includes pottery sherds (357 fragments) (Fig. 6), though the number is less than that from the Iron Age layer. The Neolithic pottery can be assigned to the late combed ware, however we are not dealing with the material from its full-developed stage, but rather a transition phase between the typical and the late combed ware. This is referred to by many characteristics: namely the thin wall thickness, irregular and careless ornamentation, temper that is mixed with stone debris as well as organic matter, sometimes with chamotte and crushed shells. At the same time the firing has taken place on high temperature as indicated by the porous surfaces. Predominantly the sherds were small and the wall thickness of the fragments remained between 0.8 (38% of the sherds with both surfaces preserved) and 0.7 (28%). The surfaces have been mostly striated, the sherds with both surfaces striated form 51% and those with striated outer surface and smoothed inner surface 36% of the material. The clay temper is quite homogenous – 67% have only rock debris in the admixture





Fig. 6. Late combed ware from the Neolithic cultural layer of Jägala settlement site.  
Joon. 6. Hilise kammkeraamika kilde Jägala asulakoha neoliitilisest kultuurkihist. (TÜ 1444.)

and 23 % have rock debris combined with organic matter added to the clay. Chamotte has been added in 18 cases and traces of crushed shells could be identified in 5 cases. The ornamentation is present with one third of the sherds, the majority of which are pits and comb impressions, shallow pits are popular too. In a few cases grooves and notches were determined. All the obtained rim sherds were of even thickness or slightly thicker than the wall and somewhat slanting inwards. Diagonal comb impressions were used to decorate the rims.

The most numerous group among the gathered material consists of various quartz finds (Fig. 7): 724 flakes out of which 19 struck in bipolar technique, 93 blades or blade fragments and 14 cores, most of which were bipolar too. No artefacts of secondary processing were identified. However, many flakes and blades carried traces of using which indicates that a respectable number among them have served as functional tools. Only 17 flint finds were collected, among them 11 flakes, 5 blades or blade fragments and 1 scraper on a flake. The flint is predominantly of local origin, although two flakes and a blade fragment are of foreign greyish brown flint. The share of flint finds among the stone material is remarkably small. But compared to the settlement sites on the islands of Saaremaa and Hiiumaa and Vihasoo III on the northern coast of Estonia where the share of flint remained between 3.4 % – 19 % (Kriiska & Saluäär 2000, 36), the 17 pieces (2 %) from Jägala is not a surprising result indeed. Quartz finds were not entirely found from the lower Neolithic layer but to some extent from the Iron Age layer together with striated pottery. This cannot be regarded as unusual, since quartz could have been used during the Iron Age in limited amounts as well. Nevertheless, the similarity of the material refers that the stone finds probably





Fig. 7. Quartz finds from the Neolithic cultural layer of Jägala settlement site.  
Joon. 7. Kvartsleide Jägala asulakoha neoliitilisest kultuurkibist. (TÜ 1444.)

originated from the Neolithic layer, which was partly mixed with later earthworks on both sides of the rampart and partly included in the sand of the later rampart in place of the initial burnt wooden construction.

The bone fragments from the Neolithic cultural layer were predominantly burnt and in most part undeterminable. The only identified bones belonged to a pig (though it is not possible to say whether a domesticated species or a wild bore) and probably seal, two tooth fragments to some herbivorous species (cattle?). Among the unburnt bones only one fragment of a seal could be connected with the Neolithic cultural layer (Maldre 2006).

## CONCLUSIONS

The archaeological excavations completed in 2005 confirmed settlement on the hillfort during (1) the Neolithic during the Late Comb Ware Culture and (2) the Pre-Roman and Roman Iron Age. Although the youngest stray find from the hillfort dates from the 6<sup>th</sup>-7<sup>th</sup> century, and a radiocarbon dating made by Ain Lavi (1999) refers to continuing of the settlement at least until the Middle Iron Age,



the last excavations do not verify the habitation during that period. The Neolithic habitation in Jägala was formed before 3900 cal BC on an island or directly on the shore of the Litorina Sea. Probably the settlement continued during the Late Neolithic on the bank of the Jägala River. The hillfort was taken into use again during the Iron Age. According to the excavation results of 2005 the hillfort's rampart was built in two stages. Some time between 130 BC - 60 AD a wooden construction made of horizontally placed logs was erected on the northern side of the hillfort. A pile of small burnt stones which function is not completely explained, was stacked on the southern side of the log construction. In the second stage, after the wooden construction had been burnt down, a sand rampart, presumably fortified with a limestone wall, was built.

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## ARHEOLOOGILISED KAEVAMISED JÄGALA LINNAMÄEL

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Jägala linnamägi asub Jägala jõe idakaldal, ümbrusest kõrgemal põhja-lõunasuunalisel liivasel maa-ninal, mis on kolmest küljest piiratud veega: idast ja läänest Jägala jõe ning lõunast hüdroelektrijaama "paisjärvega". 27000–28000 m<sup>2</sup> suuruse õuega linnamäele pääses maitsi vaid põhja suunast, kuhu rajatud kaitsevall on kuni 20 m lai ja 7 m kõrge.

2005. aasta kaevamised linnamäel olid ajendatud teaduslikust huvist, ent alahinnata ei saa ka teisi aspekte (päästekaevamine, linnuse kaevamismetoodika omandamine, kohalike elanike suur huvi muistise ja koha populariseerimise vastu). 2005. aastal avati 45 m<sup>2</sup> suurune kaevand põhjavalli loodeosas (joon. 1:A) eesmärgiga selgitada valli ehitusjärke. Lisaks rajati 4 m<sup>2</sup> suurune proovikaevand valli jalamile, põhikaevandist 30 m kaugusele, kus puhastati välja lõik 20. sajandil rajatud hoone vundamendist (joon. 1: B). Enamus kaevandist oli kaetud lahtise liivaga, mättakihti (1) leidis vaid kohati (joon. 2). Mättakihi all paljandusid sporaadiliselt paigutatud lubjakiviplaadid (3). Kokku eristati kaheksa paeplaatide kihti. Erinevad kihid olid ebaühtlased ning korralikku paemüüri ei täheldatud, ehkki eeldatavalt koosnes valli ülemine kiht just paest (joon. 3), mis loodusliku ja inimtegevuse tulemusena oli osaliselt hävinud. Müüri esialgset kõrgust ning laiust ei olnud võimalik mõõta. Paeplaatide all paljandus 70 cm paks liivavall (4), mis oli eeldatavalt kuhjatud samal ajal paemüüri-ga. Väheste riibitud pinnaga ke-raamikakildude järgi võis valli lubjakividest osa ehitustööd dateerida rauaaja esimesse poolde. Pärast liivavalli eemaldamist puhastati välja tumehalli värvi 20–25 cm pak-sune sõene kiht, mille moodustas sütt ja rauaaegseid keraamikakilde (kokku 446 fragmenti) sisaldav liiv. Rauaaegne keraamika on vormitud käsitsi, savimassi on lisatud kivipurdu, vähemal määral orgaanikat ning ühel keraamikakillul avastati väljapõlenud viljatera või seemne jälg. Leiti viis ser-vakildu, mis osutavad kergelt väljapoole eenduvale servale. Rohkem kui kolmandikul (160) kildu-dest oli välispind riibitud. Ornamenti – kolm täket või lohku – võis täheldada vaid ühel killul. Saadi kaks raudeset: kabjanael ning putkega nooleots (joon. 4), mis ilmselt pärineb eelrooma või rooma rauaajast. Lisaks leiti kaks lubjakivist helme või kivistise poolikut. Kultuurkihist kogutud põlenud ja põlemata luukillud osutavad koduloomadele: veis, kits/lammas, hobune. Tukkide vahelt leiti ka üks põlenud hülge varbaluu.

Kõige intrigeerivam leid rauaaegsest kultuurkihist oli puust kindlustuste jäänused ning põlenud rusikasuuruste kivide hunnik (joon. 5). Puitkonstruktsioon koosnes söestunud horisontaalsetest pal-gijäänustest, mis katsid viie meetri suurust ala. Suurim palk oli 25–30 cm läbimõõduga ning vähe-malt 3 meetrit pikk. Selle täpne pikkus jäi välja selgitamata, kuna mõlemad palgiotsad ulatusid kae-vandi piiridest väljapoole. Palgi lõunapoolsele küljele oli kuhjatud väikeste põlenud kivide kuhi, mis olid ladestunud kolmes kihis; kuhja kõrgus oli 90 cm ja läbimõõt 1,2 m. Ehkki kivid ja puitkonstruk-tsioon olid stratigraafiliselt ühendatud, jäi nende tähendus selgitamata. Puitara toetamiseks oli kive liiga vähe. Samalaadsete põlenud kivide hunnikud Pada II ja Peedu linnamäel osutavad võimale, et tegemist võib olla vaenlase pihta viskamiseks kogutud "laskemoonaga". Söestunud palgid viita-vad, et kindlustus koosnes horisontaalsetest palkidest, mis olid kas (1) asetatud maa sisse rammitud postide vahele või (2) nurgast seotud nn. koerakaelaks. Hetkel tunduvad mõlemad variandid võrd-selt võimalikud, kuna kaevamiste käigus ei avastatud ühtegi piisavalt suurt postiauku ja ei leitud ka puitkonstruktsiooni nurka. Radiosüsiniku analüüs ühest palgist andis kalibreeritud tulemuseks 130 BC – 60 AD. Kuna paemüürist ei õnnestunud saada korralikku dateerimismaterjali, siis on selle täpne ehitusaeg teadmata, ent stratigraafia ja keraamika sarnasus viitavad, et kahe konstruktsiooni ehitamise vahele jääv aeg ei saa olla väga pikk. Kuna keskmisest rauaajast leiud puuduvad, välja arvatud Erik Laidi poolt 1939. a. juhuleiuna saadud sõrmiksõlg, siis jääb lahtiseks, kas linnamägi oli järjepidevalt kasutusel ka selle ajani või mitte.



Rauaaegse kultuurikihi paralleelselt asuti kaevama ka kiviaegset (7) kihti. 20–30 cm paksuse kultuurikihi ülemiseks kõrguseks mõõdeti 17,5 m ü.m.p. 2005. aasta kaevamised kinnitasid, et kiviaegne asustus Jägalas on kujunenud 17–18 m ü.m.p ulatuva kõrgendikule, mis rannasiirdekronoloogia järgi jääb ajavahemikku 3900 – 3500 a. eKr. Keskneoliitikumis tüüpilise kammkeraamika kultuuri ajal paiknes koht Litoriinamere saarel või vahetult selle kaldal. Hilisneoliitikumis Limneamere faasis vesi taganes ning asustus muutus jõega tihedalt seotuks. Kiviaegne kultuurikiht oli leiduderikas, samas leiti vaid üksikuid kinnisobjekte. Fikseeriti üks kivideta tulease, mis oli süvendatud 30–35 cm looduslikku kultuurikihti. Tuleasemest koguti sütt, keraamikat ja põlenud luid. Lisaks dokumenteeriti vähemalt kaks 25–40 cm läbimõõduga ja 40–60 cm maapinda süvendatud majapidamislohku, mis sisaldasid sütt, põlenud luid ja vähesel määral keraamikakilde.

Kiviaegset kultuurikihti kaevati 30 m<sup>2</sup> ulatuses. Rauaaegse valli all ja sellest vahetult põhja pool oli neoliitiline kiht kõige paksem ja leiurikkam, sisaldades peamiselt tüüpilise ja hilise kammkeraamika kilde, kvartsikilde ja -laaste. Otsustades leidude järgi oli neoliitiline kultuurikiht oma esialgses ulatuses säilinud rauaaegse linnuse kaitsevali all. Neoliitilisel kultuurikihist kogutud keraamika (357 kildu) näol on tegemist hilise kammkeraamikaga (joon. 6), ent ilmselt mitte selle väljaarenenud järgu, vaid vaheetapiga tüüpilise ja hilise kammkeraamika vahel. Sellele viitavat on materjalis ohtralt: kildude õhuke seinapaksus, eba-korrapärane ja võrdlemisi hooletu ornament, savimass, millesse on segatud kivi purdu, orgaanilist ainet, vähemal määral šamotti ja üksikjuhtudel ka teokarpe. Samas on põletus toimunud kõrgel temperatuuril, välja on põlenud nii orgaanika kui ka teokarbid. Mõlema säilinud pinnaga kildude seinapaksus jäi 0,8 (38%) ja 0,7 cm (28%) vahemikku. Keraamika pinnad on valdavalt riibitud: 51% mõlema riibitud pinnaga ja 36% riibitud välis- ning silutud sisepinnaga kildud. Savimassi on segatud kivi purdu (67%), kivi purdu koos orgaanilise massiga (23%), šamotti (18 kildu) ning teokarbi purdu (5 kildu). Kolmandik kildudest on ornamenditud: esineb kammitempli vajutisi, lohke ja lohukesi, vähemal määral sooni ja täkkeid. Kõik kogutud servatükid pärinevad sirgetest, kergelt sisepoole pööratud servaga nõudest, kus servapaksus on seinapaksusega sama või 1 cm võrra suurem. Servadel esineb diagonaalseid kammivajutisi. Kivileidude enamuse moodustavad kvartsikillud (724), -laastud ja nende katked (93) ja -nukleused (14) (joon. 7). Sekundaarse töötlemisega esemeid ei täheldatud. Tulekivileidude koguti 17, neist 11 killud, 5 laastud ja laastukatked ning 1 kõõvits. Tulekivi on enamasti kohapealse päritoluga, kolm fragmenti on võõramaisest hallikaspruunist tulekivist. Tulekivi osakaal kivileidude hulgas on väike (2%), ent kooskõlas teiste Põhja-Eesti ja saarte asulakohtade materjaliga. Kvartsleide saadi ka rauaaegsest kultuurikihist, see võib osutada kvartsi kasutusele ka rauaajal tööriistade valmistamisel või neoliitilise kihi segamisele rauaajal. Neoliitilisel kultuurikihist saadud luuleiud olid enamikus tugevalt põlenud ja sellest tulenevalt ei olnud võimalik neid kõiki määrata. Määratud leidude hulgas esineb hülge, sea (selgusetu, kas kodu- või metssiga) ning rohusööja (veis?) luid.

Kokkuvõtteks saab konstateerida, et 2005. aasta arheoloogilised välitööd kinnitasid asustust Jägalal linnamäel (1) neoliitikumis hilise kammkeraamika perioodil ning (2) eelrooma ja rooma rauaajal. Olgugi et hilisem leid linnamäelt on 6.–7. sajandist pärinev sõrmiksõlg ning 1999. aastal Ain Lavi poolt korjatud söest teha lastud <sup>14</sup>C-analüüside tulemused pärinesid samuti samast perioodist, ei kinnita viimased kaevamised selleaegset asustust. Ligikaudu 3900 aastat eKr alguse saanud neoliitilise asustuse järel võeti linnamägi uuesti kasutusele rauaajal. Ilmselt on linnuse kaitseehitised rajatud kahes etapis. Ajavahemikus 130 eKr – 60 pKr ehitati puitkonstruktsioon horisontaalsetest palkidest, mille taha kuhjati kive. Pärast puitkindlustuse mahapõlemist on teises etapis kuhjatud liivast vall, mis fikseeriti paemüüriega.